





Replacement of Nyrang Creek Bridge

Review of Environmental Factors

Cabonne Council

12 October 2023



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1. Introduction

Cabonne Council (Council) has engaged GHD Pty Ltd (GHD) to prepare a Review of Environmental Factors (REF) for the proposed replacement of Nyrang Creek Bridge near Canowindra, NSW (the proposal). During flooding in November 2021 the abutments of the bridge washed downstream, and a temporary solution was devised by installing sheet piles and concrete blocks at the base of the bridge. Nevertheless, a year later in November 2022 a major flood removed these temporary fixes and caused further damage with bridge approaches being completely washed away leaving the bridge unserviceable to road users.

Refer to Figure 2.1 for the locality and key features of the site.

1.1 The proposal

Council proposes the following:

- Demolition and removal of remaining debris and concrete structures from existing bridge.
- Construction of a new two-way concrete bridge with low performance barriers supported by driven pile foundations with new deck level and bridge length to suit hydraulic requirements.
- Re-installation of guardrail.
- Removal of unsealed temporary culvert-causeway sidetrack and road alignment restored to its previous condition.
- Rehabilitation of disturbed vegetation.

The proposal is further described in Section 2 and concept plans are provided in Appendix A.

1.2 Purpose of this REF

This REF has been prepared by GHD on behalf of Council to assess the potential impacts of the proposal. For the purposes of these works, Council is the proponent and the determining authority under Division 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The purpose of this REF is to describe the proposal, to assess the likely impacts of the proposal to having regard to the provisions of Section 5.5 of the EP&A Act, and to identify mitigation measures to reduce the likely impacts of the proposal. In doing so, the REF helps to fulfil the requirements of Section 5.5 of the EP&A Act including that Council examine and take into account to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the activity. This REF has been prepared in accordance with:

- Section 171 of the Environmental Planning and Assessment (EP&A) Regulation 2021
- Guidelines for Division 5.1 assessments (Department of Planning and the Environment (DPE), 2022)
- Relevant provisions of other relevant environmental legislation, including the *Biodiversity Conservation Act 2016* (BC Act), *Fisheries Management Act 1994* (FM Act) and *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)

The findings of the REF would be considered when assessing:

- Whether the proposal is likely to have a significant impact on the environment and therefore the necessity for an environmental impact statement to be prepared and approval to be sought from the Minister for Planning and Public Spaces under Division 5.1 of the EP&A Act.
- The significance of any impact on threatened species as defined by the BC Act and/or FM Act, and whether the proposal requires a Species Impact Statement or Biodiversity Development Assessment Report.
- The significance of any impact on any matters of national environmental significance (MNES) listed under the EPBC Act, with a focus on biodiversity matters, including:
 - Whether there is a real possibility that the activity may threaten long-term survival of these matters.
 - Whether offsets are required and able to be secured.

- The need or otherwise to make a referral to the Australian Government Department of Climate Change, Energy, the Environment and Water (DCCEEW) for a decision by the Commonwealth Minister for the Environment and Water on whether assessment and approval is required under the EPBC Act.

Table 1.1 outlines the proponent contact details.

Table 1.1 *Proponent details*

Proposal Name	Replacement of Nyrang Creek Bridge
Proponent Name	Cabonne Council
Project Manager	Wayne Harris
Contact Details	P 0437-744487 E wharris@uprightmanagement.com.au

1.3 Scope and limitations

This report has been prepared by GHD for Cabonne Council and may only be used and relied on by Cabonne Council for the purpose agreed between GHD and Cabonne Council as set out in Section 1.1 of this report.

GHD otherwise disclaims responsibility to any person other than Cabonne Council arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer Section 1.4 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

1.4 Assumptions

Assumptions made by GHD when preparing this REF include (but are not limited to):

- The proposal has been assessed based on the reports and designs provided by Council and its consultants.
- The proposal is limited to the works described in Section 2 only.
- The proposal has been assessed assuming the implementation of the safeguards and mitigation measures detailed in Section 5 of this report.

2. The proposal

2.1 Proposal location and context

2.1.1 Location of the proposal

The proposal site is located on Nangar Road within the suburb of Nyrang Creek and Cabonne Local Government Area (LGA). The regional context of the proposal site and a site layout plan are shown in Figure 2.1. Location details are described in Table 2.1.

Table 2.1 Location of the proposed activity

Criteria	Details
Coordinates in latitude/longitude (GDA94-Geographic)	33°32'28.59" S, 148°33'5.23" E
Street address	Nangar Road
Locality	Nyrang Creek, NSW, Australia
Nearest town distance	10 km west of Canowindra, NSW

2.1.2 Proposal site

The size of the proposal site would be approximately 6,000 m². The proposal site consists of:

- Site construction compound
- Bridge replacement works extent
- Traffic diversion through temporary culvert causeway sidetrack

The exact extent of works for the bridge will be determined at the time of works but they would not exceed an area of 1.89 hectares as defined in the proposal plans and included in Appendix A.

2.1.3 Study area

For the purpose of this REF the following definitions apply

- Proposal site – The area that would be directly affected by construction and operation of the proposal.
- Study area – The area investigated as part of this REF which includes the proposal site and surrounding area within a 100 m radius of the proposal site.
- Locality – the area within a 10 km radius of the proposal site.

2.1.4 Site context

The proposal site context is described in Table 2.2.

Table 2.2 Site context

Criteria	Description
Great Soil Group soil type map of NSW & Australian Soil Classification (ASC) Soil Type Map of NSW	Chromosols (CH).
NSW Acid Sulfate Soil (ASS) Risk map	Area mapped as extremely low probability of ASS.
Elevation (m AHD)	300 m AHD.

Criteria	Description
Topography	The topography in the vicinity of the site lacks appreciable topographic relief. The highly eroded banks on both sides of the bridge slope down to the creek at an angle of approximately 45 degrees. The banks and soils of the creek are significantly eroded where the existing bridge structure once laid. The surrounding vegetation consists of dense vegetation and medium sized native gums.
Drainage/hydrology	The proposal site drains in a south westerly direction into Nyrang Creek.
Water catchment	Lachlan catchment
Flood prone land	The proposal site is located on flood prone land.
Bushfire prone land	The proposal site is located in Vegetation Category 1 and 3.
Location of services	There is no indication that services would be impacted based on the site visit undertaken by GHD. Contractors would be required to carry out their own investigations prior to construction works to confirm if utilities are present and make appropriate investigation to their location if their presence is noted.

2.1.5 Land use and ownership

Land use and ownership of the site are described in Table 2.3.

Table 2.3 Land use and ownership

Criteria	Description
Land use zoning at the site	SP2 Infrastructure under Cabonne Local Environmental Plan (LEP) 2012.
Land use at proposal location	<ul style="list-style-type: none"> – Waterway – Bridge/Road
Land uses surrounding the site	The predominant land use surrounding the existing bridge is typically agricultural with land reserved for rural and agricultural purposes.
Who owns the site (within the accepted road reserve)?	Council is responsible for the accepted road reserve.
Is land to be acquired as part of the proposal?	All works would remain within the road reserve. No land acquisition is required.
Do any works, including access requirements, impinge on a National Park or land owned by National Parks and Wildlife Service (NPWS)?	No.

2.1.6 Site inspection

A site walkover was conducted by GHD environmental consultants on 14 September 2023. Selected site photos taken during the site visit are presented in Table 2.4.

Table 2.4

Site inspection photos 14 September 2023



Photo 1 *Location of construction compound on the closed section of Nangar Road (looking north)*



Photo 2 *Potenital lay down area considred for machinery and equipment adjacent to the sidetrack*



Photo 3 *Unsealed tempoary culvert-causeway sidetrack downstream of Nyrang Creek Bridge*



Photo 4 *Remaining concrete strucutree of Nyrang Bridge with approaches washeded away*

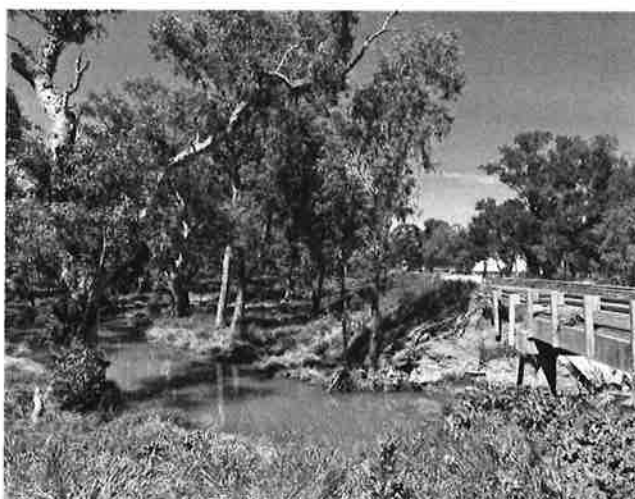
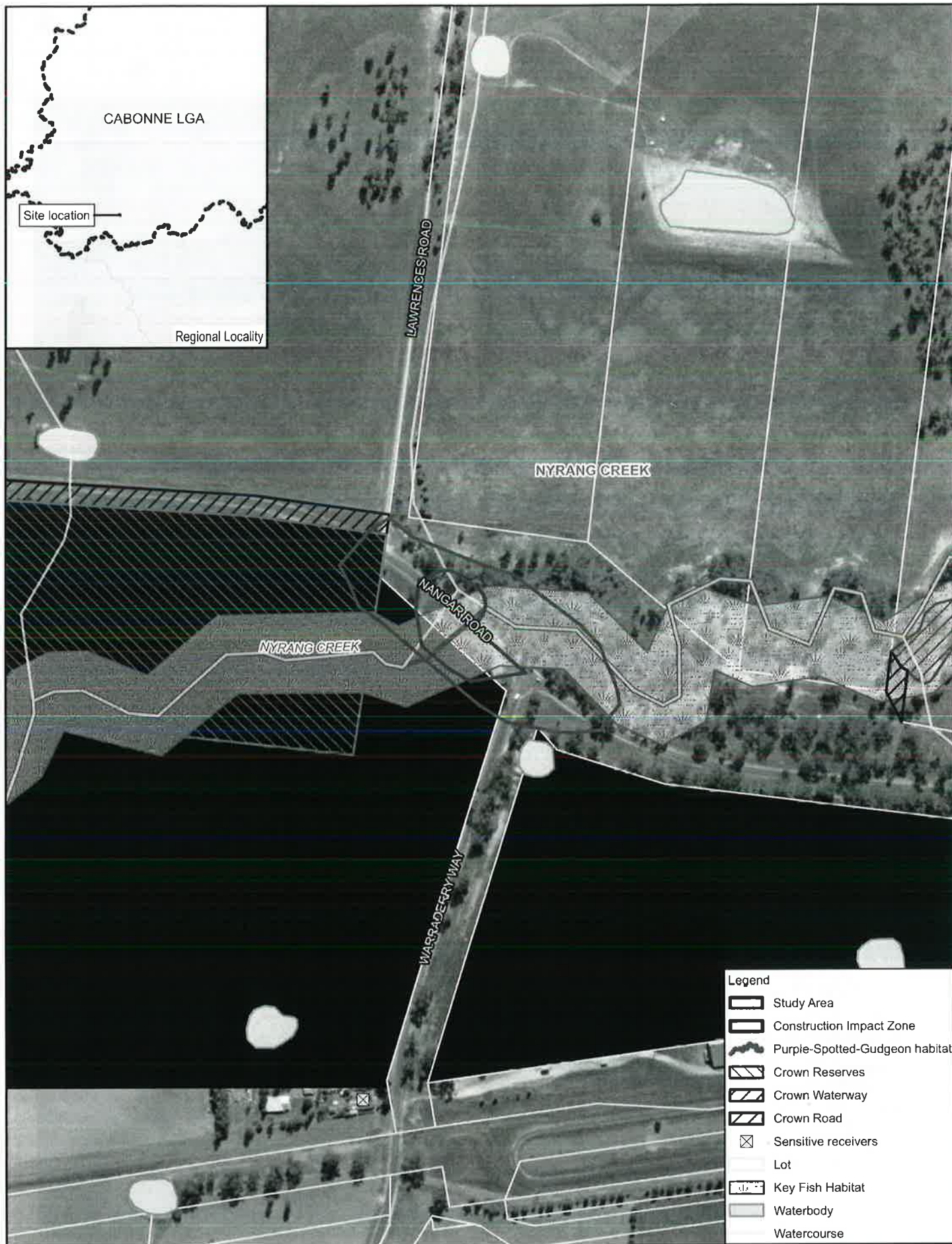


Photo 5 *Water quality and banks upstream of Nyrang Creek Bridge*



Photo 6 *Slow flow of Nyrang Creek observed downstream*



Paper Size ISO A4
0 30 60 90 120
Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56



Cabonne Council
Bridge replacement
Review of Environmental Factors

Nyrang Creek
Site location

Project No. **12622302**
Revision No. **A**
Date **28/02/2023**

FIGURE 2.1

2.2 Proposal justification and consideration of alternatives

2.2.1 Need for the proposal

In late November 2021 floodwaters swept through parts of Central West NSW causing the abutments of Nyang Creek Bridge to be washed away downstream. To restore traffic access to this key route, that would otherwise result in a 50 kilometre detour, Council adopted a quick temporary solution by installing sheet piles and concrete blocks to the base of the bridge to provide support and stabilisation. Before permanent repairs were able to be undertaken, a major flood 12 months later caused the temporary repairs and the majority of the bridge's concrete foundations to be swept downstream resulting in the closure of the bridge.

Local road users have been utilising an unsealed tempoary culvert-causeway sidetrack located downstream from the existing bridge which was installed by Council after the 2022 flood to maintain traffic flow between Canowindra and Eugowra whilst the bridge is unserviceable and repaired. Nangar Road services road users travelling between Canowindra and Eugowra and has a medium density of vehicles travelling on it daily. Additionally, it is an important link for the surrounding agricultural landscape which requires a large percentage of heavy vehicles to travel via this route.

Council is eligible for financial assistance under the *NSW Natural Disaster Essential Public Asset Restoration Program*. However, Council have also indicated that they would contribute financially to the road repairs of the proposal so that the raised bridge height will connect seamlessly to Nangar Road either side of the bridge.

The proposal is required to:

- Replace the bridge
- Ensure the road and bridge complies with current Australian Standards
- Enable the bridge to return to pre-flood conditions
- Maintain safety and reinstate long-term access for local residences

Council is responsible for managing road related transport infrastructure and providing safe and efficient access for the local road network.

2.2.2 Proposal objectives

The key objectives of the proposal are to:

- Restore the road / bridge to a serviceable condition and improve the resilience of the structure to major flooding events in the future
- Reinstate safe and long-term access to local roads users in the region
- Address collective community concerns and reduce the likelihood of future accidents and fatalities at this section of Nangar Road

2.2.3 Options

The following options were considered for the proposal:

– Option 1 – Do nothing

This option would leave the bridge in its current deteriorated and unserviceable condition and involve not replacing the bridge. It would eventually result in closure of the road as the long-term feasibility of the sidetrack in a flood zone is not practical. As such, a permanent detour route between Canowindra and Eugowra would be utilised adding up to 55 minutes travel time to road users journeys.

– Option 2 – Rehabilitation

This option would involve keeping the bridge and backfilling the abutments and resealing the road which would return the bridge to its original 8 m span. In the short term this is a low-cost option but could result in long-term spending due to the remaining service life of the bridge and would require continuous and frequent monitoring of the condition of the bridge.

– **Option 3 – Additional spans**

This option involves keeping the bridge but adding additional spans to the existing bridge which would result in extending the bridge length to 20 meters with three spans. This would require instalments of two additional piers and two abutments which would essentially create two separate bridges against the existing bridge. An alternative to this is installing box culverts to the base slabs of the bridge. This design is unlikely to be endorsed by fisheries as Nyrang Creek is a class 3 or 4 waterway containing moderate fish habitat. There are high costs involved with both designs.

– **Option 4 – New bridge (preferred option)**

This option involves demolishing the existing bridge remains and replacing it with a new, single span bridge compliant to current engineering standards. This option addresses the service life concerns of the bridge as it will be designed to last 100 years and suitable to accommodate flows under ARI20 event. This option would likely result in the least impacts to the environment as it removes the likelihood for frequent repairs and therefore minimal long-term disturbance of the surrounding environment.

2.2.4 Justification for the preferred option

Constructing a new bridge option (option 4) is the preferred option as it would return the road and bridge to a serviceable condition. This option meets the proposal objectives as it would address any community concerns and provide long term resilience to future flooding events.

2.3 Construction

2.3.1 Construction methodology

Specific details of construction methods, scheduling and equipment requirements would be determined by the successful contractor. Information presented in this section relates to the general site arrangements and the contractor's scope of works. On average about 20 personnel would be required for the proposal works, staffing would be confirmed by the successful works contractor. The works Contractor would need to provide necessary accommodations for light vehicles and amenities for the staff on the proposal.

Before any works can commence, any remaining material would be removed and relocated temporarily to the site compound area so that a solid working base can be established. Footings, concrete abutments and piers would be installed. A bridge deck with an overall deck length of 15.4 metres and a deck level to accommodate flows under the ARI20 event would be installed. This higher deck level is required to enable construction of a much thicker and more flood-resilient bridge deck compared to the previous structure. Street furniture would be installed on and around the new bridge. The connecting road either side of the bridge would be restored to its previous condition with localised rip-rap scour protection installed around the new bridge abutments to tie the new bridge into the adjacent creek banks.

2.3.2 Construction compound

A temporary construction compound is proposed to be established on the closed eastern section of Nangar Road and cleared road reserve between Warraderry Way and the temporary side track, on Council owned land (refer to Figure 2.1). If a larger compound is required for storage of equipment, this would be determined by the construction contractor in discussions with Council and the private landowners (where required). The compound area would be secured using temporary fencing and is likely to consist of:

- Site shed
- Parking
- Equipment laydown area
- Waste receptacles
- Storage areas for construction materials
- Site amenities

Site amenities would be provided for site workers, which would be appropriately managed by a licenced contractor.

2.3.3 Plant and equipment

The proposal would require a range of construction plant and equipment. The following is an indicative list of equipment that would be required for the proposal:

- Crane
- Skid loaders
- Boom lift
- Bulldozer
- Cherry picker
- Chainsaw
- Excavator
- Trucks
- Light vehicles
- Pile driving equipment
- Loader
- Concrete mixers and pumps
- Rollers
- Bitumen seal sprayer
- Water cart
- Power tools

2.3.4 Site access and vehicle movements

Construction access to the site from Canowindra would be from the east via Nangar Road. Nangar Road is a regional two-way, sealed road currently open in both directions through use of the temporary culvert-causeway sidetrack but is limited to a single lane of traffic.

2.3.5 Construction staging

Works would be undertaken generally in the following manner, subject to works contractor's preferred methods:

Stage 1 - Preparatory works

- Establishment of traffic control procedures and access, as required
- Installation of erosion and sedimentation controls in accordance with *Managing Urban Stormwater: Soils and construction—Volume 1* (Landcom, 2004), *Volume 2C Unsealed roads* (DECC, 2008b) and *Volume 2D, Main Road Construction* (DECC, 2008c) (collectively referred to as the "Blue Book")
- Installation of coffer dams
- Establishment of the site compound area
- Tree felling/ branch removal
- Installation of temporary working platforms for cranes or piling rigs

Stage 2 - Bridge construction

- Demolition and removal of existing concrete abutments, concrete piers, bridge deck and any remaining bridge debris
- Excavation of abutment area
- Construction of concrete abutments
- Backfilling behind abutments
- Installation of rip-rap scour protection
- Installation of driven piles
- Installation of deck

- Installation of railings and street furniture
- Removal of temporary culvert causeway crossing
- Rehabilitation of vegetation

Stage 3 - Decommissioning of site

- At completion of works, all construction equipment, materials and waste would be removed
- Decommissioning of site compound
- Erosion and sediment controls and coffer dams removed

2.3.6 Duration and working hours

Planning of works for expected wet weather conditions is essential. Incorporation of temporary measures to protect exposed work areas and prevent further damage to the site, especially with respect to rainfall events, would be essential at this proposal site. The works would be completed as outlined in Table 2.5.

Table 2.5 Proposal timeframes

Commencement Date	The estimated commencement date is early 2024.
Work Duration	The estimated total timeframe of the proposed works is 6 months, weather permitting.
Work Hours	<p>Works would take place during standard construction hours (7:00 am to 6:00 pm Monday to Friday and 8:00 am to 1:00 pm on Saturdays) unless otherwise approved by Council.</p> <p>The proposed hours are in accordance with the <u>Interim Construction Noise Guideline</u> (DECC 2016) as follows:</p> <ul style="list-style-type: none"> – Mondays to Fridays between 7:00 am and 6:00 pm – Saturdays between 8:00 am and 1:00 pm – No work would occur on Sundays or public holidays

2.4 Operation

Once operational, this section of Nangar Road and the Nyrang Creek Bridge would function in its pre-flood capacity as a bridge providing access to local residents and reinstating safe, long-term access from Eugowra and Canowindra.

3. Statutory and planning framework

3.1 Environmental Planning and Assessment Act

The EP&A Act is the principal planning legislation in NSW for all environmental planning and development approvals. All relevant statutory planning instruments under the EP&A Act have been examined in relation to the proposal. Part 5, Division 5.1 provides controls for 'activities' that do not require development consent undertaken by a public authority.

Section 2.109 of State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&I SEPP) outlines that 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. As the proposal is being undertaken by a public authority (Council) the works are permitted without consent and is subject to assessment and approval under Part 5 of the EP&A Act.

The proposal is not State Significant Infrastructure or State Significant Development and an environmental impact statement is not required for approval by the Minister for Planning and Public Spaces.

Council is the determining authority for the proposal. This REF fulfils Councils obligation under Section 5.5 of the EP&A Act to examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the activity.

The proposal has been assessed against other relevant Commonwealth and State environmental legislation and policies in Section 3.2.

3.2 Other environmental legislation

Table 3.1 outlines how the proposal has been considered under other relevant Commonwealth and State environmental legislation.

Table 3.1 Other environmental legislation and policies

Legislation	Relevance to the proposal
Commonwealth legislation	
EPBC Act	<p>The EPBC Act provides protections for the environment, especially aspects considered MNES. MNES include:</p> <ul style="list-style-type: none">– World Heritage areas– National heritage places– Wetlands of International Importance (i.e., Ramsar wetlands)– Nationally listed threatened species and ecological communities– Listed migratory species– Commonwealth marine areas– The Great Barrier Reef Marine Park– Nuclear actions– A water resource, in relation to coal seam gas development and large coal mining development. <p>Environmental approvals under the EPBC Act are required for any 'action' that is likely to have a significant impact on:</p> <ul style="list-style-type: none">– MNES– Environment on Commonwealth land– The environmental overseas when action is undertaken by a Commonwealth agency <p>A search of the EPBC Act Protected Matters Search Tool was undertaken on the 19/9/2023 for the proposal site and a 10 km buffer (refer to Appendix C). No MNES or Commonwealth land have been identified to be impacted by the proposal. As the proposal would not impact on any of these matters, and is not being undertaken by a Commonwealth agency, a referral to DCCEEW is not required. MNES are further discussed in Section 5.4 and Appendix C.</p>

Legislation	Relevance to the proposal
State legislation	
EP&A Regulation	<p>Section 171 of the EP&A Regulation defines the factors which must be considered when determining if an activity assessed under Division 5.1 of the EP&A Act has or is likely to have a significant impact on the environment. Section 6 of this REF provides an environmental impact assessment of the proposed activity in accordance with Section 171, and Appendix B specifically responds to the factors for consideration under Section 171.</p> <p>Additionally, Section 171(4) states that this REF must be published on Council website or the NSW planning portal if:</p> <ol style="list-style-type: none"> The proposal has a capital investment value of more than \$5 million The proposal requires an approval or permit under the following provisions before it may be carried out: <ol style="list-style-type: none"> Section 144, 200, 205 or 219 of the FM Act Section 57 of the <i>Heritage Act 1977</i> (Heritage Act) Section 90 of the <i>National Parks and Wildlife Act 1974</i> (NP&W Act) Sections 47-49 or 122 of the <i>Protection of the Environment and Operations Act 1997</i> (PEO Act) <p>No permits are required by council under FM legislation.</p>
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. If a significant impact is likely, a Species Impact Statement or Biodiversity Development Assessment Report is required. Section 7.2(1)(a) and 7.3 of the Act describe the assessment requirements and thresholds for what is considered a significant impact.</p> <p>One Endangered Ecological Community White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion was identified as potentially occurring on site.</p> <p>A biodiversity site assessment was undertaken by an ecologist on 20 September 2023 to assess the impacts of the proposal works to any native flora and fauna, and the identified Endangered Ecological Community. The assessment found that the proposal would be unlikely to have any significant impacts to any threatened species or communities. A summary of the biodiversity assessment is provided in Section 5.4, and the assessments of significance is provided in Appendix I.</p> <p>There were no other threatened species or communities listed under this Act were identified as having a moderate or greater likelihood of occurrence within the proposal area. A Species Impact Statement or Biodiversity Development Assessment Report is not required for the proposal.</p>
FM Act	<p>The objectives of the FM Act are to conserve, develop and share the fishery resources of the State for the benefit of present and future generations. It lists threatened species of fish and marine vegetation, including endangered populations, ecological communities and key threatening processes. One of the objectives of the FM Act is to 'conserve key fish habitats' which includes aquatic habitats that are important to the maintenance of fish populations generally and the survival and recovery of threatened aquatic species.</p> <p>Section 220ZZ of the FM Act lists the factors to be considered to determine the impact of an activity on threatened species, populations, ecological communities of fish and marine vegetation. If the proposal is likely to significantly impact on the threatened species, populations or ecological communities, then an SIS is required.</p> <p>A permit is required under the FM Act for works that constitute dredging and reclamation. The proposal would fit the definition of dredging and reclamation under the FM Act. However, Clause 227 of the Fisheries Management (General) Regulation 2019 states that 'any dredging work or any reclamation work carried out by a public authority is exempt from Division 3 of Part 7 of the FM Act if the work is carried out in accordance with the Code of Practice for Minor Works in NSW Waterways (the Code) published on the Department's website.' Works would be undertaken in accordance with the Code, therefore a permit under the FM Act is not required. Under Section 219 of the FM Act, works within a waterway that may result in the temporary or permanent blockage of fish passage would also require a permit from DPI Fisheries. The proposal would not block fish passage.</p>

Legislation	Relevance to the proposal
NP&W Act	<p>The NP&W 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.</p> <p>A search of the Aboriginal Heritage Information Management System (AHIMS) was undertaken on 21 September 2023 which identified four sites within a one-kilometre buffer of the proposal site (Appendix I).</p> <p>The proposal is unlikely to uncover or harm Aboriginal objects as the area of the proposal works are on previously disturbed land and are a safe distance from identified Aboriginal objects. Therefore a permit under the NP&W Act is not required.</p> <p>Aboriginal heritage is further discussed in Section 5.</p>
Heritage Act	<p>The Heritage Act provides for the conservation of buildings, works, archaeological items, relics and places of heritage value.</p> <p>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 the proposal is therefore not required under Part 4 of the Heritage Act.</p> <p>Heritage is further discussed in Section 5.</p>
POEO Act	<p>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.</p> <p>The proposal does not constitute a scheduled activity and does not require an Environmental Protection Licence (EPL). Therefore, no licences have been identified as being required.</p> <p>The proposal would generate natural excavated material waste. Disposal of this waste would be subject to Part 5.6 Division 3 of the POEO Act.</p>
<i>Water Management Act 2000 (WM Act)</i>	<p>The main objective of the WM Act 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.</p> <p>Section 56 of the WM Act establishes access licences for the taking of water within a water management area. No significant dewatering is required and therefore this section is not applicable.</p> <p>The WM Act requires controlled activity approvals to carry out specified controlled activities on or under waterfront land (section 91E). The proposal would be undertaken on waterfront land (within 40 metres of the bed of a river or estuary) and as such comprises a controlled activity under the WM Act. However, public authorities such as Council are exempt from obtaining a controlled activity approval under Clause 41 of the Water Management (General) Regulation 2018.</p> <p>Even though a formal approval under the WM Act is not required, as the proposal is located within 40 m of a waterway, it would be undertaken in a manner consistent with the requirements of controlled activities. These are detailed in <i>NSW DPI – Office of Water publication Guidelines for watercourse crossings on waterfront land</i> (DPI NSW 2012).</p> <p>The proposal complies with this guideline in the following ways:</p> <ul style="list-style-type: none"> – The design would be certified by a suitably qualified engineer – The design minimises disturbance to the watercourse and vegetation – The design maintains the natural geomorphic processes and hydrological regimes of the watercourse – The design protects against scour <p>The proposal would include stabilisation and rehabilitation of all disturbed areas including, revegetation, mulching and maintenance in order to adequately restore the integrity of the riparian corridor of Nyrang Creek.</p> <p>Water quality and hydrology is further discussed in Section 5.</p>
<i>Roads Act 1993</i>	<p>The <i>Roads Act 1993</i> provides for the operation, maintenance and use of roadways in NSW including managing authorities, rites of passage and classification of roads.</p> <p>Consent under Section 138 of the <i>Roads Act 1993</i> is required for any works or activities in a public reserve, public road or footpath (nature strip). A Section 138 permit is not required as Council are both the proponent and road authority as defined by the <i>Roads Act 1993</i>.</p>
<i>Biosecurity Act 2015</i>	<p>The <i>Biosecurity Act 2015</i> 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.</p> <p>Mitigation measures to reduce the spread of weeds and biodiversity are further discussed in Section 5.</p>

Legislation	Relevance to the proposal
State Environmental Planning Policy (Biodiversity and Conservation) 2021 (B&C SEPP)	<p>Chapters 3 and 4 of the B&C SEPP aims 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. Chapters 3 and 4 only apply to development that requires development consent from Council. As the proposal is being assessed under Part 5 of the EP&A Act, the provisions of the B&C SEPP do not apply.</p> <p>Biodiversity has been considered in Section 5. See Appendix C to Appendix G for supporting information.</p>

3.2.1 Summary of permits and licences required

Under Division 3 of Part 7 in section 200 of the FM Act, a local government authority requires a permit issued by the Minister to carry out dredging or reclamation works. However, as per section 227 of the Fisheries Management (General) Regulation 2019 any dredging works carried out by a public authority are exempt if the works are carried out in accordance with the *Code of Practice for Minor Works in NSW Waterways* (RMS 2014).

The guidelines note that minor works which require an REF for works within a waterway require consultation to be undertaken with Fisheries NSW. As such, Council is to consult with Fisheries prior to the commencement of works to confirm if the proposal can be undertaken in accordance with the Code of Practice and if a permit is required."

4. Community and agency consultation

4.1 Government agency and stakeholder involvement

Part 2.2 of the TISEPP contains provisions for public authorities to consult with local councils and other public authorities prior to the commencement of certain types of development. A summary of the consultation requirements under the TISEPP is provided below in Table 4.1.

Table 4.1 SEPP (Transport and Infrastructure) consultation requirements summary

SEPP (Transport and Infrastructure) consultation requirements	Response
2.10 – Consultation with councils relating to development with impacts on council-related infrastructure or services	
(1) public authority, or a person acting on behalf of a public authority, must not carry out development to which this section applies unless the authority, or the person has—	
(a) will have a substantial impact on stormwater management services provided by a council.	Not triggered – No consultation required.
(b) is likely to generate traffic to an extent that will strain the capacity of the road system in a local government area.	Not triggered – No consultation required.
(c) involves connection to, and a substantial impact on the capacity of, any part of a sewerage system owned by a council.	Not triggered – No consultation required.
(d) involves connection to, and use of a substantial volume of water from, any part of a water supply system owned by a council.	Not triggered – No consultation required.
(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.	Not triggered – No consultation required.
(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).	Not triggered – No consultation required.
(2) public authority, or a person acting on behalf of a public authority, must not carry out development to which this section applies unless the authority, or the person has—	
(a) given written notice of the intention to carry out the development (together with a scope of works) to the council for the area in which the land is located, and	Not triggered – No consultation required.
(b) taken into consideration any response to the notice that is received from the council within 21 days after the notice is given.	Not triggered – No consultation required.
2.11 – Consultation with councils—development with impacts on local heritage	
(1) This section applies to development carried out by or on behalf of a public authority if the development—	
(a) is likely to affect the heritage significance of a local heritage item, or of a heritage conservation area, that is not also a State heritage item, in a way that is more than minor or inconsequential.	Not triggered – No consultation required.
(b) is development that this Chapter provides may be carried out without consent.	Not triggered – No consultation required.
(2) is development that this Chapter provides may be carried out without consent.	

SEPP (Transport and Infrastructure) consultation requirements	Response
(a) had an assessment of the impact prepared, and	Not triggered – No consultation required.
(b) given written notice of the intention to carry out the development, with a copy of the assessment and a scope of works, to the council for the area in which the heritage item or heritage conservation area (or the relevant part of such an area) is located, and	Not triggered – No consultation required.
(c) taken into consideration any response to the notice that is received from the council within 21 days after the notice is given.	Not triggered – No consultation required.
2.12 - Consultation with councils—development with impacts on flood liable land.	
(1) A public authority, or a person acting on behalf of a public authority, must not carry out development on flood liable land that may be carried out without development consent under a relevant provision unless the authority or person has—	
(2) A public authority, or a person acting on behalf of a public authority, must not carry out, on flood liable land, development that this Chapter provides may be carried out without consent and that will change flood patterns other than to a minor extent unless the authority or person has—	
(a) given written notice of the intention to carry out the development (together with a scope of works) to the council for the area in which the land is located, and	The proposal is located on flood liable land, however as per Section 2.17 of the TISEPP consultation is not required as Council is the proponent.
(b) taken into consideration any response to the notice that is received from the council within 21 days after the notice is given.	Not triggered – No consultation required
2.13 - Consultation with State Emergency Service—development with impacts on flood liable land	
(1) A public authority, or a person acting on behalf of a public authority, must not carry out development on flood liable land that may be carried out without development consent under a relevant provision unless the authority or person has—	
(a) given written notice of the intention to carry out the development (together with a scope of works) to the State Emergency Service, and	Consultation is required. Council to undertake consultation.
(b) taken into consideration any response to the notice that is received from the State Emergency Service within 21 days after the notice is given.	Consultation is required. Council to undertake consultation.
(2) Any of the following provisions in Part 2.3 is a relevant provision—	
(a) Division 1 (Air transport facilities), (b) Division 2 (Correctional centres and correctional complexes), (c) Division 6 (Emergency services facilities and bush fire hazard reduction), (d) Division 10 (Health services facilities), (e) Division 14 (Public administration buildings and buildings of the Crown), (f) Division 15 (Railways), (g) Division 16 (Research and monitoring stations), (h) Division 17 (Roads and traffic), (i) Division 20 (Stormwater management systems).	The proposal is being undertaken under Division 17. Consultation is required.
2.14 - Consultation with councils—development with impacts on certain land within the coastal zone	
(1) This section applies to development on land that is within a coastal vulnerability area and is inconsistent with a certified coastal management program that applies to that land. acquired under Part 11 of that Act—the Office of Environment and Heritage.	
(2) A public authority, or a person acting on behalf of a public authority, must not carry out development to which this section applies, which this Chapter provides may be carried out without development consent, unless the authority or person has—	
(a) A public authority, or a person acting on behalf of a public authority, must not carry out development to which this section applies, which this Chapter provides	Not triggered – No consultation required.

SEPP (Transport and Infrastructure) consultation requirements	Response
may be carried out without development consent, unless the authority or person has—	
(b) taken into consideration any response to the notice that is received from the council within 21 days after the notice is given.	Not triggered – No consultation required.
2.15 - Consultation with authorities other than councils	
<p>(1) A public authority, or a person acting on behalf of a public authority, must not carry out specified development that this Chapter provides may be carried out without consent unless the authority or person has—</p> <ol style="list-style-type: none"> given written notice of the intention to carry out the development (together with a scope of works) to the specified authority in relation to the development, and taken into consideration any response to the notice that is received from that authority within 21 days after the notice is given. 	
<p>2) For the purposes of subsection (1), the following development is specified development and the following authorities are specified authorities in relation to that development—</p>	
<p>(a) development adjacent to land reserved under the <i>National Parks and Wildlife Act 1974</i> or to land acquired under Part 11 of that Act—the Office of Environment and Heritage,</p> <p>(b) development on land in Zone C1 National Parks and Nature Reserves or in a land use zone that is equivalent to that zone, other than land reserved under the <i>National Parks and Wildlife Act 1974</i>—the Office of Environment and Heritage,</p> <p>(c) development comprising a fixed or floating structure in or over navigable waters—Transport for NSW,</p> <p>(d) development that may increase the amount of artificial light in the night sky and that is on land within the dark sky region as identified on the dark sky region map—the Director of the Observatory,</p> <p>(e) development on defence communications facility buffer land within the meaning of clause 5.15 of the Standard Instrument—the Secretary of the Commonwealth Department of Defence,</p> <p>(f) development on land in a mine subsidence district within the meaning of the Mine Subsidence Compensation Act 1961—the Mine Subsidence Board,</p> <p>(g) development on, or reasonably likely to have an impact on, a part of the Willandra Lakes Region World Heritage Property—the World Heritage Advisory Committee and Heritage NSW,</p> <p>(h) development within a Western City operational area specified in the <i>Western Parkland City Authority Act 2018</i>,</p>	Not triggered – No consultation required.
<p>(3) In this section - dark sky region map means the map marked "Dark Sky Region Map" held in the head office of the Department of Planning and Environment.</p> <p>Willandra Lakes Region World Heritage Property means the land identified as the Willandra Lakes Region World Heritage Property on—</p>	
<p>(a) the Willandra Lakes Region World Heritage Property Map under Balranald Local Environmental Plan 2010, or</p> <p>(b) the Willandra Lakes Region World Heritage Property Map under Wentworth Local Environmental Plan 2011.</p>	Not triggered – No consultation required.
2.16 - Consideration of Planning for Bush Fire Protection	
<p>1) This section applies to development for the following purposes that this Chapter provides may be carried out without development consent—</p>	
<p>(a) health services facilities,</p> <p>(b) correctional centres,</p> <p>(c) residential accommodation.</p>	Not triggered – No consultation required.

4.2 Future consultation activities

Consultation undertaken by Council would include but not be limited to, newsletters or letter box drops to the residents in the surrounding vicinity of the works and those impacted by traffic access. These letters would provide an overview on the proposal work, working hours, anticipated duration of the proposal, safety measures, traffic access and a contact name and number for more information or to register community feedback or complaints.

5. Environmental assessment

This section describes in detail the potential key environmental impacts associated with the proposal during both construction and operation and details site-specific safeguards to ameliorate the identified potential impacts.

5.1 Assessment of applicable environmental factors

A scoping exercise has been completed for the proposal. The scoping exercise has considered the potential environmental impacts of the proposal to identify those environmental factors requiring environmental impact assessment within this REF.

The environmental factors relevant to the proposal are summarised in Table 5.1. Where further assessment is identified to be required, this is provided in Sections 5.2 to 5.9. For environmental factors that do not require further environmental assessment, standard control measures are identified in Section 6.1.

Table 5.1 Applicable environmental factors

Environmental Factors	Comments	Detailed discussion in REF?		Where?
Landforms, geology and soils	The proposal would be undertaken on a sealed road and directly over a waterway which contains steep, highly eroded slopes. As the proposal site is located directly over a waterway, and there would be excavation on both sides of the creek potential impacts to landforms, geology and soils are discussed further in Section 5.2.	Yes	<input checked="" type="checkbox"/>	Refer to Section 5.2
		No	<input type="checkbox"/>	
Contaminated land and acid sulfate soils (ASS)	A search of the NSW EPA Contaminated Land Record undertaken on 22 September 2023 indicated that there are no existing notices for the suburb of Nyrang Creek. A search of the Australian Soil Resource Information System indicates the proposal area is located within an area that is mapped as extremely low probability of ASS being present. Given that the proposal would involve minor excavation within the disturbed road corridor and a Council owned reserve, there is minimal potential to encounter contaminated soils. The impacts due to potentially encountering contaminated soils or ASS would be mitigated through the implementation of standard control measures provided in Section 6.1.	Yes	<input type="checkbox"/>	
		No	<input checked="" type="checkbox"/>	Standard control measures to be implemented in Section 6.1
Water quality and hydrology	Nyrang Creek traverses Nangar Road and the proposal site. Given the immediate proximity of the proposal to this watercourse, impacts to water quality and hydrology are discussed further in Section 5.3.	Yes	<input checked="" type="checkbox"/>	Refer to Section 5.3
		No	<input type="checkbox"/>	
Biodiversity	A biodiversity assessment for the proposal site was undertaken by ecologists on 20 September 2023. Construction of the proposal would result in minor impacts to native vegetation and fauna habitat with the removal of two immature trees and 0.29 ha of native groundcover. Important habitat features were identified within the study area including hollow-bearing trees with large hollows able to support threatened species which have been sighted within a 10 km radius. Impacts on biodiversity are discussed further in Section 5.4.	Yes	<input checked="" type="checkbox"/>	Refer to Section 5.4
		No	<input type="checkbox"/>	

Environmental Factors	Comments	Detailed discussion in REF?		Where?
Aboriginal heritage	<p>A search of the Aboriginal Heritage Information Management System was undertaken on 21 September 2023 which identified four sites within a one-kilometre buffer of the proposal site (Appendix I).</p> <p>Given the proximity of these sites to proposal impacts to Aboriginal heritage are discussed further in section 5.5.</p>	Yes	<input checked="" type="checkbox"/>	Refer to Section 5.5.
		No	<input type="checkbox"/>	
Non-Aboriginal heritage	<p>A search of the following online heritage database searches was undertaken on the 25 September 2023:</p> <ul style="list-style-type: none"> – NSW Heritage database – Commonwealth EPBC heritage list – Australian Heritage Places Inventory – Local Environmental Plan(s) heritage items <p>There were no items in the vicinity of the proposal works. As such the proposal poses no risk to non-Aboriginal heritage items.</p>	Yes	<input type="checkbox"/>	Standard control measures to be implemented in Section 6.1.
		No	<input checked="" type="checkbox"/>	
Noise and vibration	<p>The existing noise environment is that of a rural area, consisting of road traffic and natural sounds. There is one sensitive receiver within 500 meters of the proposal (refer to Figure 2.1).</p> <p>As such, the works associated with the proposal, including the delivery of plant and material, could potentially cause noise impacts to this receiver. The potential for noise impacts are discussed further in section 5.7.</p>	Yes	<input checked="" type="checkbox"/>	Refer to Section 5.7.
		No	<input type="checkbox"/>	
Air quality	<p>Construction activities have the potential to impact on air quality due to dust generation resulting from works. Only minor potential impacts from construction dust are considered likely, given the limited extent of excavation works.</p> <p>However, as, there are sensitive receivers within close vicinity of the proposal site, potential impacts are discussed further in Section 5.7.</p>	Yes	<input checked="" type="checkbox"/>	Refer to Section 5.8
		No	<input type="checkbox"/>	
Waste management	<p>Waste streams that would potentially be generated during the proposal are detailed in section 5.9.</p> <p>While waste impact during construction can be managed through implementation of standard controls, preliminary classification of wastes, the volume of waste and storage of waste is discussed in section 5.9.</p>	Yes	<input checked="" type="checkbox"/>	Refer to Section 5.9.
		No	<input type="checkbox"/>	
Traffic and access	<p>Construction would generate increased road movements for the movement of equipment, plant and construction personnel, including contractors and workers.</p> <p>The local road network can accommodate this minor increase in traffic movements.</p> <p>However, given the density of vehicles travelling on Nangar Road daily and the need to incorporate traffic control measures on the temporary culvert sidetrack during construction, potential impacts to traffic and access are discussed further in Section 5.9.</p>	Yes	<input checked="" type="checkbox"/>	Refer to Section 5.9
		No	<input type="checkbox"/>	
Visual amenity/landscape	<p>The presence of construction equipment and the establishment of compounds and stockpile sites on the proposal site would be a minor and temporarily impact on the visual amenity of the area.</p> <p>At the completion of the proposal works the overall visual amenity would be improved and returned to pre-flood condition as far as practical.</p> <p>Visual impacts during construction would be short term and associated with construction equipment.</p>	Yes	<input type="checkbox"/>	Standard control measures to be implemented in section 6.1.
		No	<input checked="" type="checkbox"/>	

Environmental Factors	Comments	Detailed discussion in REF?		Where?
	Any impacts on visual amenity would be mitigated through the implementation of standard control measures provided in Section 6.1.			
Socio-economic effects	<p>During construction, local road users will continue to utilise the culvert causeway sidetrack installed by council. As such, there is no altered access outside what has been previously utilised since the bridge became unserviceable in November 2022.</p> <p>During operation, the proposal would provide ongoing benefit to local road users by providing long-term, safe access across Nyrang Creek.</p> <p>The proposal has the potential to indirectly affect the amenity of the surrounding community and/or users of adjoining areas during construction. These potential impacts include noise, air quality, traffic and access and visual impacts.</p> <p>Any socio-economic impacts would be mitigated through the implementation of standard control measures provided in Section 6.1.</p>	Yes	<input type="checkbox"/>	Standard control measures to be implemented in Section 6.1.
		No	<input checked="" type="checkbox"/>	
Hazards and risk	<p>Vegetation surrounding the site is mapped as Vegetation Category 1 and 3 bushfire prone land, which has the highest risk of bushfire.</p> <p>Bushfire risk would be managed through the implementation of standard control measures in section 6.1.</p>	Yes	<input type="checkbox"/>	Standard control measures to be implemented in Section 6.1.
		No	<input checked="" type="checkbox"/>	
Cumulative environmental effects	<p>The proposal would not cause any cumulative environmental effects. A search of the DPE Major Projects Planning Portal indicates that there are no active modifications in the Cabonne Shire LGA.</p> <p>It is not anticipated that the proposal would make a significant contribution to any cumulative environmental impacts on either a local or regional scale, provided that the safeguards identified in Section 6.1 are implemented.</p>	Yes	<input type="checkbox"/>	Standard control measures to be implemented in Section 6.1.
		No	<input checked="" type="checkbox"/>	

5.2 Landform, geology and soils

Issue	Description
Existing environment	<p>The geology beneath the site contains clastic sediment and soils on site are mapped as being part of the Chromosols (CH) greater soil group.</p> <p>The site is at an elevation of 300 m AHD. The slope below Nyrang Road is considerably steep nearing the creek banks and prone to erosion, directing runoff into Nyrang Creek.</p>
Proposal details	<p>Does the proposal involve the disturbance of large areas (e.g. >2ha) for earthworks?</p> <p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>
	<p>Does the site have constraints for erosion and sedimentation controls such as steep gradients, narrow corridors or is located on private property?</p> <p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>The proposal would be undertaken on a sealed road and directly over a waterway which contains steep, highly eroded slopes. As traffic flow would still be maintained on the temporary culvert-causeway sidetrack, the work area impacted by the roadworks would be strictly confined to approximately 15 m east and west from the proposed new bridge.</p>
	<p>Are there any sensitive receiving environments that are located in or nearby the likely proposal footprint or that would likely receive stormwater discharge from the proposal such as wetlands, state forests, national parks, nature reserves, rainforests, drinking water catchments?</p> <p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
	<p>The proposal site is located on Nyrang Creek. Works would occur on both the eastern and western side of the bridge. Runoff from the site would be directed into this creek.</p>

Issue	Description
Potential impacts	<p>Earthworks required as part of construction of the proposal would include:</p> <ul style="list-style-type: none"> – Demolition and removal of existing concrete abutments, concrete piers, bridge deck and any remaining bridge debris – Excavation of abutment area – Construction of concrete abutments – Backfilling behind abutments – Installation of rip-rap scour protection – Installation of driven piles – Installation of deck – Installation of railings and street furniture – Removal of temporary culvert causeway crossing – Rehabilitation of vegetation <p>Earthworks have the potential to result in localised erosion and soil loss, leading to sedimentation of the waterway. The extent of the working base and installation of concrete abutments and scour protection would require some vegetation disturbance. Impacts associated with erosion would be minimised through the implementation of safeguards outlined below.</p> <p>The operational phase of the proposal is expected to have a positive impact to soil stability in the area, as the proposal would stabilise the area surrounding the bridge affected by the flood through constructing embankments. These would channel the flow of water during floods and protect the adjacent soil from erosion.</p>
Proposed safeguards	<ul style="list-style-type: none"> – Implement the Erosion and Sediment Control Plan as part of the Construction Environmental Management Plan that includes soil and erosion protection measures in accordance with <i>Managing Urban Stormwater: Soils and construction—Volume 1 (Landcom, 2004), Volume 2C Unsealed roads (DECC, 2008b) and Volume 2D, Main Road Construction (DECC, 2008c) (collectively referred to as the Blue Book)</i>. – Erosion and sedimentation controls will be checked daily and maintained as required until ground stability is achieved. – High risk soil erosion activities such as earthworks will not be undertaken immediately before or during high rainfall (i.e. >20 mm in any 24-hour period) or wind events. – Locate stockpiles and construction materials away from vegetation, waterways and drainage lines, implement bunding practices where appropriate. – Minimise exposure of soils and retain vegetation where practicable. – Vehicle and machinery movement will be minimised across the site. Wherever possible, vehicles and machinery will be parked at the compound site and movement on site will be on foot. – Construct temporary drainage structures in accordance with the 'Technical Guideline - Temporary Stormwater Drainage for Road Construction' (RMS 2011). – Stockpiles will be designed, established, operated and decommissioned in accordance with the <i>RMS Stockpile Site Management Guidelines 2015</i>. – The rehabilitation of disturbed areas would be carried out progressively as construction stages are completed, and in accordance with: <ul style="list-style-type: none"> • Landcom's "Blue Book" (4th Edition) on sediment and erosion control (Landcom 2004) • RMS Landscape Guidelines (LGNSW 2019) • RMS Guidelines for Batter Stabilisation Using Vegetation (RMS 2015a)

5.3 Water quality and hydrology

Issue	Description
Existing environment	<p>The proposal is located directly over a waterway, Nyrang Creek, which is natural watercourse that drains into the Belubula River approximately 10 km southwest of the proposal site. The Belubula River continues west and meets the Lachlan River approximately 3 km (in a straight line) southwest of the proposal site.</p> <p>All waterways in the vicinity of the proposal form part of the Lachlan Catchment.</p>
Proposal details	<p>Are the works located within or adjacent to a waterbody or wetland, or within 40 m of a waterway? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>Proposal works would occur directly over Nyrang Creek.</p>

Issue	Description
	<p>If yes, the NSW DPI Water or DPI Fisheries should be notified. Have they been notified? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>Council to notify NSW DPI Water and DPI Fisheries before construction works commence.</p> <p>Is the location known to flood or be prone to water logging? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>According to Council and recent site history, the proposal site location is prone to flooding.</p>
Potential impacts	<p>Does the proposal pose any potential risk to the surrounding water quality? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>Potential impacts to water quality, hydrology and flooding that could arise from the proposal include:</p> <ul style="list-style-type: none"> – Sediment and nutrient laden water resulting from ground disturbance during removal of loose soil and vegetation entering the waterway. – Pollution of local water quality from machinery and construction materials and spills. – Runoff from cleared and mulched vegetation stockpiled on-site. – Erosion and sedimentation that may affect Nyrang Creek and local aquatic habitats. – A variety of dispersible liquid materials would be used which pose a potential pollutant threat to local water quality. These liquids include, but are not limited to, diesel, unleaded petrol, machinery oils and lubricants. The nature of these liquids and their ability to disperse away from the study area means that they could have a negative impact on ground or surface water on or adjacent to the study area, especially during rainfall events. <p>Overall, with the safeguards and management measures described in the next section, the potential for impacts on water quality, hydrology and flooding impacts from the proposal are considered to be minimal.</p>
Proposed safeguards	<ul style="list-style-type: none"> – A spill kit will be kept on site for potential chemical or fuel spills. – Contractors will be trained in the correct use of a spill kit. – All materials that have the potential to contaminate surface water or groundwater will be stored at least 40 m away from any watercourses and on flat grades. – Erosion and sediment controls in accordance with Landcom's "Blue Book" (4th Edition) (refer Section 5.2). – Visual monitoring of Nyrang Creek water quality (i.e. turbidity, hydrocarbon spills/slicks, algal blooms, colour and odour) will be undertaken on a regular basis to identify any potential spills or deficient erosion and sediment controls. A comprehensive record will be kept of these inspections. If water quality deteriorates over consecutive monitoring inspections quantitative water quality testing should be undertaken to obtain a comprehensive understanding of creek health. – Cofferdamming would be utilised when removing the existing footings and concrete piers of the bridge whilst maintaining flow (if occurring) through the middle of the creek including fish passage. – When deconstructing/constructing the bridge a capture system will be installed across the creek to prevent any materials from entering the creek. – If feasible, schedule construction works to minimise disruption to the creek during sensitive times such as spawning seasons for fish or other aquatic life. – Works will be conducted during dry seasons or low-flow periods where possible. – No works will be undertaken during heavy rain periods or where flooding warnings for the wider area are issued. During works weather forecasts would be monitored daily. – All work sites will be kept in a clean and tidy condition to prevent waste/litter from entering watercourses.

5.4 Biodiversity

Issue	Description
Existing environment	<p>The following terrestrial species database searches were undertaken:</p> <ul style="list-style-type: none"> – EPBC Act Protected Matters Search (performed on 19 September 2023). – NSW BioNet Search (performed on 19 September 2023). <p>Did the terrestrial species database searches identify any threatened ecological communities, populations, threatened flora and/or threatened or protected fauna, or migratory species within the vicinity of the proposed works? Both Federal and State listed matters must be considered.</p> <p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>A site survey was undertaken by two GHD Ecologists on 20 September 2023. The aim of the survey was to identify vegetation present on site, fauna habitat on site and the potential for threatened species to occur. The species identified by the database searches were evaluated for their potential to occur within the study area based on habitat assessments undertaken in the field and local BioNet records. No threatened flora, fauna, or migratory species were identified as having moderate or greater likelihood of occurrence within the study area.</p> <p>Two plant community types (PCT) were identified within the study area, PCT 9 and PCT 267. PCT 267 (White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland) is associated with the Critically Endangered Ecological Community (CEEC) <i>White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions</i> listed under the BC Act, and <i>White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland</i> listed under the EPBC Act.</p> <p>PCT 267 within the study area meets the BC Act listed CEEC due to the site occurring within the NSW Western Slopes Grassy Woodlands bioregion and the dominant overstory species containing White Box (<i>E. albens</i>) and White Cypress Pine (<i>Callitris glaucophylla</i>). PCT 267 within the study area does not conform to the EPBC listed CEEC as the patch within the study area has a groundcover layer of less than 50% native perennial vegetation cover.</p> <p>An Assessment of Significance (AoS) as per Section 7.3 of the BC Act has been completed for potential impacts to this community and determined that the proposal would not result in a significant impact on the CEEC (Appendix G). The likelihood of occurrence for threatened biota predicted to occur within the locality is provided in Appendix D.</p> <p>Vegetation within the proposal site and study area is comprised of a native overstory with a ground layer containing a mix of native and exotic grasses and forbs (Photo 5.1).</p> <p>PCTs identified within the study area were PCT 9 and PCT 267. PCT 9, River Red Gum - wallaby grass tall woodland wetland on the outer River Red Gum zone mainly in the Riverina Bioregion (photo 5-2), occurs as a tall grassy riverine woodland within the study area dominated by River Red Gum (<i>E. camaldulensis</i>). A sparse shrub layer was present with a few scattered Silver Wattles (<i>Acacia dealbata</i>). The groundcover is dominated by a mix of native and exotic grasses and forbs. Dominant exotic species included Spear Thistle (<i>Cirsium vulgare</i>*), Small Nettle (<i>Urtica urens</i>*), Lamb's Tongues (<i>Plantago lanceolata</i>*), Variegated Thistle (<i>Silybum marianum</i>*), Scarlet Pimpernel (<i>Lysimachia arvensis</i>*), Perennial Ryegrass (<i>Lolium perenne</i>*) and Sharp Rush (<i>Juncus acutus</i>*). Natives grasses and forbs included Creeping Saltbush (<i>Atriplex semibaccata</i>), Tall sedge (<i>Carex appressa</i>) Wallaby Grass (<i>Rytidosperma</i> spp.), Common Couch (<i>Cynodon dactylon</i>), Windmill Grass (<i>Chloris truncata</i>), Rock fern (<i>Cheilanthes austrotenuifolia</i>) and Purple Burr Daisy (<i>Calotis cuneifolia</i>).</p> <p>PCT 267, White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion, occurs as a tall grassy woodland on the higher elevations above the creekline and is dominated by White box (<i>E. albens</i>) and White Cypress Pine (<i>Callitris glaucophylla</i>). The shrub layer was sparse only containing Silver Wattle (<i>Acacia dealbata</i>). The groundcover is dominated by a mix of native and exotic grasses and forbs. Dominant exotic species included Spear Thistle (<i>Cirsium vulgare</i>*), Lamb's Tongues (<i>Plantago lanceolata</i>*), Scarlet Pimpernel (<i>Lysimachia arvensis</i>*), Perennial Ryegrass (<i>Lolium perenne</i>*), Barley Grass (<i>Hordeum vulgare</i>*) Some natives grasses and forbs were scattered throughout including Wallaby Grass (<i>Rytidosperma</i> spp.), Common Couch (<i>Cynodon dactylon</i>), Windmill Grass (<i>Chloris truncata</i>).</p> <p>A full list of the flora species identified on site during the field survey is provided in Appendix E.</p> <p>Habitat features within the study area include:</p> <ul style="list-style-type: none"> – Mature River Red Gum canopy trees which provide shelter and foraging resources for birds and microbats. – Several hollow bearing trees (HBTs) which may be utilised for shelter and breeding by arboreal mammals, birds or microbats. Six occur within the project site how none of these would be impacted by the proposal.

Issue**Description**

- A dense ground cover of grasses and forbs which provides foraging resources for local fauna, as well as shelter and refuge habitat for ground-dwelling birds, reptiles and invertebrates. A detailed list of habitat features identified within the study area is provided in Appendix F.



Photo 5.1 *Example of groundcover within proposal area*

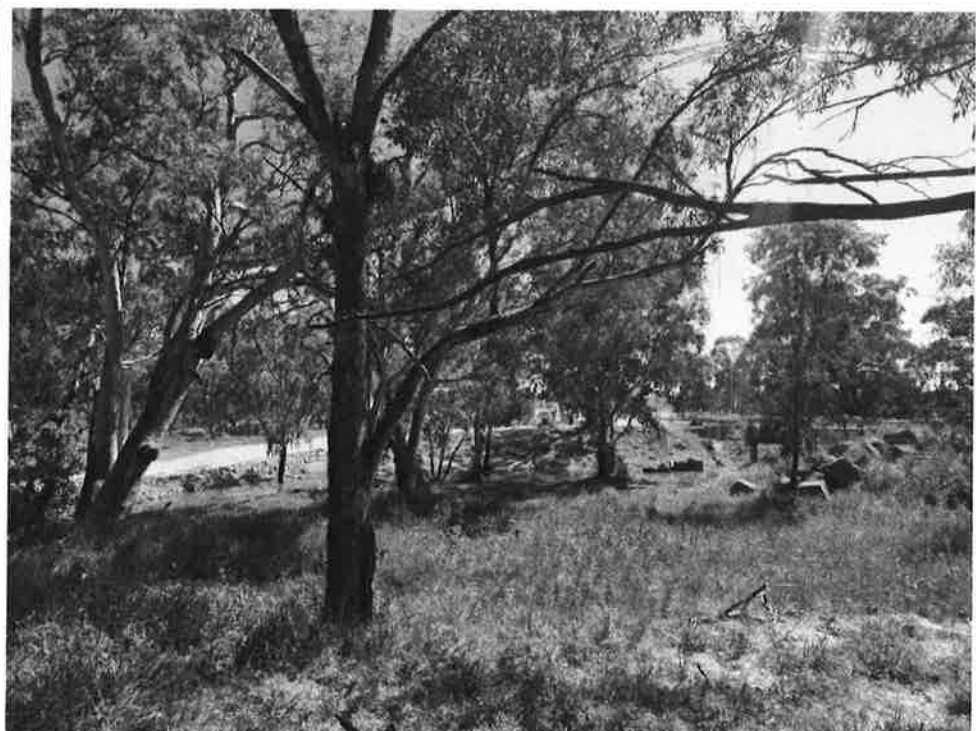




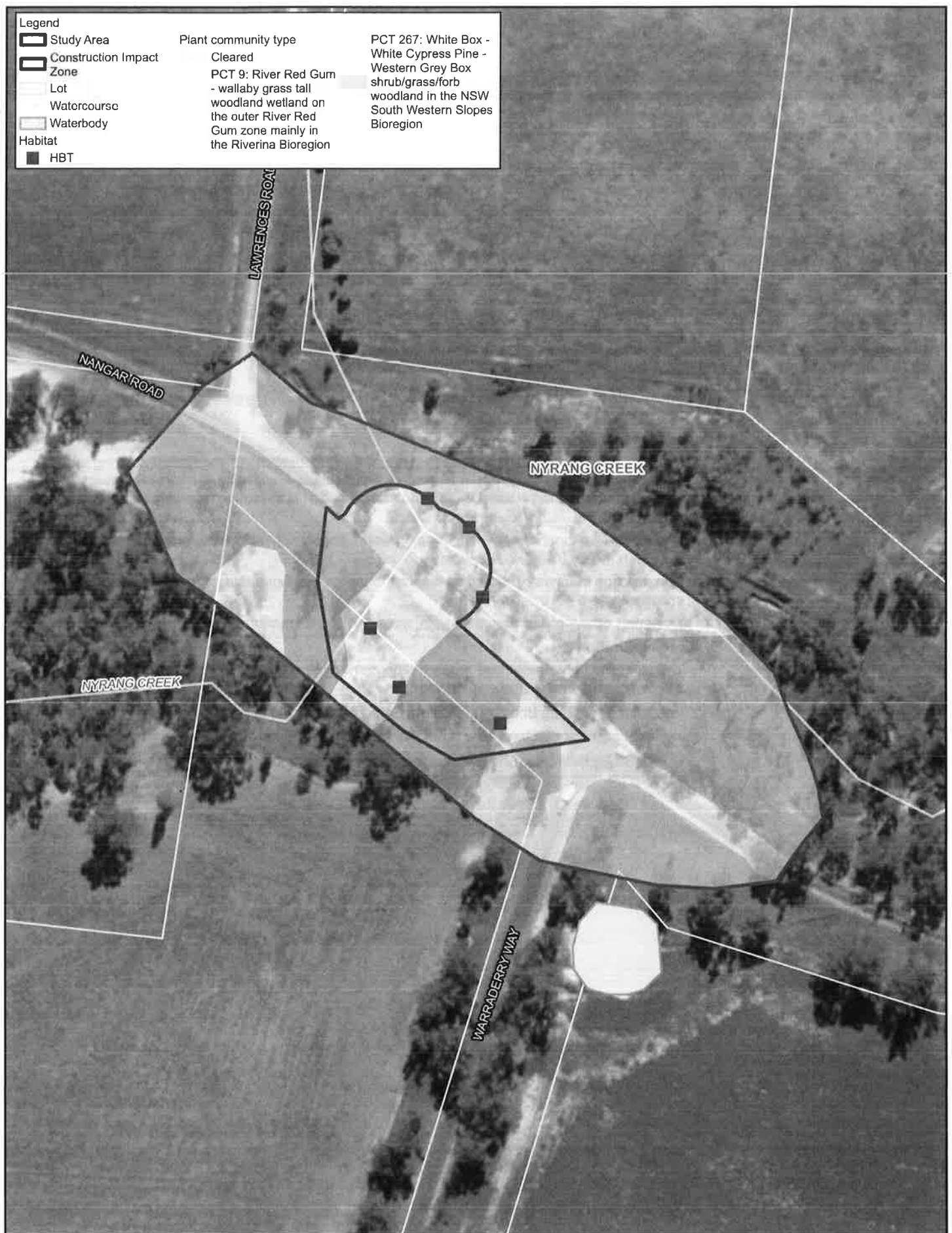
Photo 5.2 *Example of PCT 9 within proposal area*

Issue	Description
	 <p data-bbox="443 922 1023 947">Photo 5.3 <i>Example of PCT 267 within the study area</i></p>
	<p data-bbox="443 987 1329 1014">Are the proposed works likely to impact on any vegetation including, shrubs, trees?</p> <p data-bbox="443 1025 584 1052">Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p data-bbox="443 1064 1492 1200">The proposal would require clearing of approximately 0.56 ha of vegetation, comprising of 0.27 ha of PCT 9 and 0.29 ha of PCT 267. The 0.27 ha of PCT 9 includes the removal of 2 juvenile River Red Gums. These trees do not contain any hollows and offer limited foraging habitat for native fauna. The removal of 0.56 ha of native vegetation is minor and would not impact habitat connectivity within the surrounding locality.</p>  <p data-bbox="443 1930 1013 1957">Photo 5.4 <i>Juvenile trees to be potentially removed</i></p>

Issue	Description
	<p>Will the proposed works affect any tree hollows or crevices?</p> <p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>HBT's of varying sizes are present within the proposal area however, no HBTs would be impacted by the proposal.</p> <hr/> <p>Will the proposed works disturb any natural waterways or aquatic habitat?</p> <p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>The Nyrang creek is identified as Key Fish Habitat (KFH) on the Fisheries NSW Spatial Data Port (Department of Primary Industries). The creek flows through the proposal site and will be subject to minor excavation work. The creek has been previously subject to past disturbance from road traffic and construction of the existing bridge and culvert-causeway which has resulted in minimal native aquatic vegetation remaining within the creek. Fish passage would not be impeded during the construction of the proposal through the use of a coffer dam. The design of the new bridge would be an open concrete bridge with piles to ensure fish passage is not impeded during operation.</p> <p>Due to the proposed work occurring within an area of KFH, under Part 7 of the FM Act if the work is carried out in accordance with the Code of Practice for Minor Works in NSW Waterways (the Code) published on the Department's website.' Works would be undertaken in accordance with the Code, therefore a permit under the FM Act is not required. Under section 219 of the FM Act, works within a waterway that may result in the temporary or permanent blockage of fish passage would also require a permit from DPI Fisheries. The project would not block fish passage therefore a permit from DPI Fisheries is not required.</p> <hr/> <p>Are there any weeds present that require the implementation of safeguards?</p> <p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>A majority of the flora species identified within the study area are common within the region and are often found within disturbed areas.</p> <p>Seven priority weeds listed on NSW WeedWise (NSW Department of Primary Industries) for the Central Tablelands were identified within the study area. These are:</p> <ul style="list-style-type: none"> – Blackberry (<i>Rubus fruticosus</i> sp. agg.) (also listed as a Weed of National Significance) – Patterson's Curse (<i>Echium plantagineum</i>) – Spear Thistle (<i>Cirsium vulgare</i>) – Noogoora Burr (<i>Xanthium occidentale</i>) – Mexican Poppy (<i>Argemone ochroleuca</i> subsp. <i>ochroleuca</i>) – Galvanized Burr (<i>Sclerolaena birchii</i>) <p>These species are subject to the Biosecurity Act and a general biosecurity duty applies. All pest plants are to be regulated to "prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable".</p>

Issue	Description
Potential impacts	<p>Does the proposal pose any potential risk to the biodiversity within the vicinity of the site? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>Removal of fauna habitat</p> <p>The proposal would remove approximately 0.56 ha of native vegetation, comprising 0.27 ha of PCT 9 and 0.29 ha of PCT 267.</p> <p>Removal of this vegetation would result in:</p> <ul style="list-style-type: none"> – Minor loss in the amount of available foraging and shelter habitat for native species in the local area. – Negligible increase to the listed key threatening process 'Clearing of native vegetation'. The vegetation to be removed mostly poor to moderate condition groundcover dominated by exotic grasses and forbs which provides limited habitat to local fauna species. Two juvenile River Red Gums will also be removed which provide minor habitat functions for local fauna. The proposed work are unlikely to have an adverse impact on any retained vegetation, ecological communities, or fauna habitat resources outside of the proposal area. – Potential mortality or injury to any non-mobile species that may occur within the proposal area during the construction phase of the proposal. – Temporary disturbance resulting from increased noise, vibration, and light during the construction phase of the proposal. <p>Introduction of disease</p> <p>Vehicles and plant have the potential to introduce new weed species to site or perpetrate their spread from within the site. This risk will be minimised by mitigation measures outlined below.</p> <p>Diseases and pathogens can be introduced or spread to the proposal area via dirt or organic material attached to machinery, vehicles, equipment and employees. This risk will be minimised by the implementation of wash down procedures detailed in DPIE's (2020) hygiene protocol for vehicles and heavy machinery, as outlined below.</p>
	<p>Assessment of significance of impacts</p> <p>PCT 267 identified within the proposal area is associated with the BC Act-listed CEEC <i>White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions</i>. An AoS has been completed for this CEEC and is provided in Appendix G. The AoS confirmed the proposal would not result in a significant impact due to the following:</p> <ul style="list-style-type: none"> – The proposal would not result in any impacts to known occurrences of species associated with this community and is unlikely to result in an adverse effect on the life cycle of associated species such that a viable local population is placed at risk of extinction. – The proposal will not result in fragmentation or isolation of this community. – The proposal would not result in any impacts to areas of intact native vegetation elsewhere in the area that represents better quality potential habitat for this community. <p>A Species Impact Statement or Biodiversity Development Assessment Report is not required.</p> <p>No MNES listed under the EPBC Act are likely to be impacted by the proposal. A referral to DCCEEW is not required.</p>
Proposed safeguards	<p>General safeguards</p> <ul style="list-style-type: none"> – As part of the site induction process, provide all site personnel with information on the biodiversity values of the study area, including potential threatened species habitat, threatened ecological communities, no-go areas and responsibilities under relevant environmental legislation, including but not limited to the EP&A Act, BC Act and EPBC Act. Refer to the threatened species habitat descriptions detailed in Appendix D. – Should unexpected, threatened fauna or flora be identified at any time during construction, cease work immediately in the area to prevent further harm to the individual. Contact Council's Environmental Officer and a suitably qualified ecologist to determine if further assessment or management plans are required. <p>Clearing of vegetation/demolition</p> <ul style="list-style-type: none"> – No removal or disturbance of vegetation outside the proposal area is to occur without further assessment. – Establish exclusion zones in accordance with <i>Guide 2 Exclusion Zones of Roads and Traffic Authority Biodiversity Guidelines</i> (Transport Roads and Traffic Authority, 2011) to ensure clearing does not extend beyond the approved area.

Issue	Description
	<ul style="list-style-type: none"> – Trees are to be removed in accordance with <i>Guide 4: Clearing of Vegetation and Removal of Bushrock of Roads and Traffic Authority Biodiversity Guidelines</i> (Transport Roads and Traffic Authority, 2011). – 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. – No HBTs (including dead/stag trees and hollow bearing stumps) are to be removed without further assessment for fauna species or hollows by a suitably qualified person. – Coarse woody debris (CWD) produced from vegetation clearing is to be placed in areas of existing vegetation within the assessed study area. CWD is not to be pushed into adjoining vegetation. – If any damage occurs to vegetation outside of the boundaries of the work site as a result of the proposal, the Council Project Manager will be notified and will establish strategies for mitigation of impacts and site restoration. <p>Pathogen control</p> <ul style="list-style-type: none"> – Implement wash-down procedures detailed in DPIE's (2020) hygiene protocol for vehicles and heavy machinery. <p>Invasion of exotic species</p> <ul style="list-style-type: none"> – Manage vegetation within the road reserve and adjacent areas of vegetation clearing in accordance with <i>Guide 6: Weed Management of Roads and Traffic Authority Biodiversity Guidelines</i> (Transport Roads and Traffic Authority, 2011) to reduce invasion of priority weed species. – Use weed-free topsoil in any landscaping works post-construction and revegetate disturbed sites with locally indigenous species. – Construction machinery should be washed prior to entering and leaving site to ensure weed propagules are not transported. – Transport of any soil or gravel material from one site to another is prohibited. <p>Site rehabilitation</p> <ul style="list-style-type: none"> – The rehabilitation of disturbed areas will be carried out progressively as construction stages are completed, and in accordance with: <ul style="list-style-type: none"> • Landcom's "Blue Book" (4th Edition) on sediment and erosion control (Landcom 2004) • <i>RMS Landscape Guidelines</i> (LGNSW 2019) • <i>RMS Guidelines for Batter Stabilisation Using Vegetation</i> (RMS 2015a)



Paper Size ISO A4
0 10 20 30 40
Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56



Cabonne Council
Bridge replacement
Review of Environmental Factors

Nyrang Creek
Ecology

Project No. **12622302**
Revision No. **A**
Date **28/02/2023**

FIGURE 5.1

5.5 Aboriginal heritage

Issue	Description
Existing environment	<p>Are the works likely to disturb previously undisturbed areas of the landscape? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>Has an AHIMS register search been conducted? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>Are there any known Aboriginal artefacts/sites within the vicinity of the work site? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>Four records of sites/places of Aboriginal heritage were recorded within a one-kilometre buffer of the proposal site (refer Appendix I). The closest site is located approximately 200 metres west from the proposal.</p> <p>Would the project involve the removal of mature native trees? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>
Potential impacts	<p>Does the project pose any potential risk to Aboriginal heritage? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>A search of the Aboriginal Heritage Information Management System was undertaken on 21 September 2023 with the findings of four sites within a one-kilometre radius of the proposal site (refer to Appendix I). The closest site is located approximately 200 metres west from the project, as such there would be no direct impacts to listed or known Aboriginal sites.</p> <p>The bridge replacement works span Nyrang Creek, which is a landscape feature likely to have been subject to regular use in Aboriginal people's lives and the lack of previously recorded AHIMS sites does not preclude the potential for Aboriginal objects to identified in the vicinity of the Proposal site.</p> <p>However, the activity is restricted to rehabilitation works to maintain an existing road bridge that has been impacted by recent flood events. Any Aboriginal objects previously occurring within the Proposal site are likely to have been disturbed during the initial bridge construction, maintenance work or scouring during flood events and the potential for Aboriginal cultural material, if any, to be impacted by the proposal is considered to be very low.</p> <p>The proposal is required to maintain an existing road within a landform that has been previously disturbed and is considered a low impact activity.</p> <p>The potential to impact any unexpected finds would be managed by implementing proposed safeguards provided below. The proposal is unlikely to harm Aboriginal objects and therefore a permit under the NP&W Act is not required.</p>
Proposed safeguards	<ul style="list-style-type: none"> All personnel working on site will receive training to ensure awareness of relevant statutory responsibilities. If Aboriginal heritage items are uncovered during the works, all works in the vicinity of the find must cease and the Council will be contacted immediately, and the <i>Standard Management Procedure - Unexpected Heritage Items</i> (RMS, 2015b) will be followed.

5.6 Noise and vibration

Issue	Description
Existing environment	The existing noise environment is that of a rural area, consisting of road traffic and natural sounds.
Proposal details	<p>Are there any noise sensitive areas near the location of the proposed works that may be affected by the works (i.e. church, school, hospital, residences)? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>The proposal is located amongst dispersed rural properties. The closest sensitive receiver is a rural resident located approximately 400 meters south of the proposal site on Warraderry Way (refer to Figure 2.1).</p>

Issue	Description
	<p>Are the proposed works going to be undertaken during standard working hours detailed below?</p> <p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p><i>Standard working hours</i></p> <p><i>Monday – Friday</i> <i>7:00 am to 6:00 pm</i></p> <p><i>Saturday</i> <i>8:00 am to 1:00 pm</i></p> <p><i>Sunday and Public Holidays</i> <i>No work</i></p>
Potential impacts	<p>Does the proposal pose any potential risk to the surrounding noise quality?</p> <p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>The construction of the proposal would require construction activities which would generate noise uncharacteristic of the surrounding rural environment. Noise impacts are expected to be minor and restricted to the construction phase of the proposal. Any noise impacts would be short term and limited to standard construction hours.</p> <p>No vibration impacts to sensitive receivers are expected due to the distance between the proposal site and the closest residence on Warraderry Way.</p> <p>Operation of the proposal would not alter the noise environment for sensitive receivers.</p>
Proposed safeguards	<ul style="list-style-type: none"> – The works will be carried out during normal work hours (i.e. 7:00 am to 6:00 pm Monday to Friday; 8:00 am to 1:00 pm Saturdays) which comply with the NSW Interim Construction Noise Guideline, 2016. Any work that is performed outside normal work hours or on Sundays or public holidays requires approval from Council. – Council or nominated contractors will notify affected sensitive receivers if any work is to occur outside of normal work hours. – All employees, contractors and subcontractors are to receive an environmental induction. The induction must at least include: <ul style="list-style-type: none"> • All proposal specific and relevant standard noise and vibration mitigation measures • Relevant licence and approval conditions • Permissible hours of work • Any limitations on high noise generating activities • Location of nearest sensitive receivers • Construction employee parking areas • Designated loading/unloading areas and procedures • Site opening/closing times (including deliveries) • Environmental incident procedures – Regularly inspect and maintain equipment to ensure it is in good working order. – Use quieter and less vibration emitting construction methods where feasible and reasonable. – Neighbouring property access to be maintained. Residents affected by the proposal would be notified of the works in advance. Contact details would be provided for queries or complaints. – Plant and equipment will be switched off when not in use. – Landowners will be notified prior to commencement of activities that may result in noise disturbance. During the project, the contact details of a representative of the company will be provided to receive and address noise complaints.

5.7 Air quality

Issue	Description
Existing environment	The existing environment is rural in nature. No industries are located near the proposal site.
Proposal details	<p>Are the proposed works likely to result in large areas (>2ha) of exposed soils?</p> <p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>Are there any dust sensitive receivers located within the vicinity of the proposed works during the construction period (i.e. church, school, hospital, residences)?</p> <p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>

Issue	Description
	<p>The closest sensitive receiver is a rural resident located approximately 400 meters south of the proposal site on Warraderry Way (refer to Figure 2.1).</p> <p>Is there likely to be an emission to air of dust, smoke, steam or vehicle emissions? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>The proposal may generate dust during earthworks. Construction vehicles would generate emissions in keeping with permitted emissions from mobile plant.</p>
Potential impacts	<p>Does the proposal pose any potential risk to the surrounding air quality? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>Fumes, odours and other air emissions may occur from vehicles, plant and equipment on site. Dust generation is possible during excavation works and material emplacement. However, these adverse impacts would be short-term and temporary. It is considered that construction of the proposal would not significantly impact local air quality if the safeguards listed below are implemented.</p>
Proposed safeguards	<ul style="list-style-type: none"> – Dust generated during construction will be visually monitored by construction staff. If dust generation is evident, measures such as water sprays, minimising vehicle movements and reducing vehicle speeds would be implemented immediately. – Stabilisation of disturbed areas will be undertaken as soon as practicable. – Plant and machinery will be turned off when not in use and maintained in accordance with Australian standards or manufacturers recommendations. – Construction plant and equipment are to be maintained in good working order. – Any dust complaint will be investigated as soon as possible, and measures taken to manage any impacts identified. – No burning of any materials will occur. – During transportation, loads will be adequately covered.

5.8 Waste and chemical management

Issue	Description
Existing environment	<p>Are the proposed works likely to generate >200 tonnes of waste material (contaminated and/or non-contaminated material)? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>The proposal works are likely to generate more than 200 tonnes of waste material.</p> <p>Are the proposed works likely to require a licence from EPA? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>Waste generated from the proposal works will be transported and disposed of at a licensed waste facility, as such a licence from the EPA is not required under the licensing thresholds.</p> <p>Is waste being transported off site to another location? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>Waste generated by the proposal is expected to include vegetation, concrete abutments and piers, asphalt pavement and any remaining bridge debris.</p> <p>Other waste generated would include small amounts of domestic waste, sewage waste and packaging may also be generated by the proposal.</p> <p>No hazardous waste is expected to be produced by the proposal. Wastes would be classified prior to disposal and recycled where possible. Waste to be disposed would be transported a licenced waste management facility for disposal.</p> <p>Does the proposal pose any potential risk to the surrounding environment as a result of waste generated? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>The proposal works pose potential risks to the surrounding environment due to the generation of waste on site outlined above.</p>

Issue	Description
Potential impacts	<p>Waste materials generated by construction of the proposal could include:</p> <ul style="list-style-type: none"> – Concrete abutments and piers from existing bridge structure. – Damage bitumen road materials. – Vegetation waste, which would be stockpiled at the temporary compound site, prior to removal. – Rock and soil waste generated from earthworks would be managed as per the contractor's preferred method and will be compliant with waste regulations. – Domestic waste including food scraps, aluminium cans, glass bottles, plastic and paper containers and putrescible waste generated by site construction personnel. – Liquid wastes such as oils, lubricants etc. used by machinery or excess material (erosion controls and mulch) generated during works. Excess material not used onsite would be classified in accordance with the Waste Classification Guidelines (EPA 2014) for disposal at a licensed waste management facility. <p>Waste materials have the potential to cause pollution to the environment. However, given the proposed safeguards detailed below, pollution to the environment is unlikely to occur.</p>
Proposed safeguards	<ul style="list-style-type: none"> – All site waste will be managed in accordance with the waste reduction hierarchy of avoid, reduce, re-use and recycle as per the Waste Avoidance and Resource Recovery Act 2001. – Wastes will be classified prior to disposal and recycled where possible. – Liquid waste is to be contained in appropriate sealed containers. – Waste will only be transported to a site that may lawfully receive the material. A Section 143 Certificate (POEO Act) will be required from the receiving premises to confirm the necessary environmental and planning approvals are in place. – Cease work in the immediate vicinity of any areas of suspected contamination that are identified prior to or during work. Ensure that these areas are not disturbed and are cordoned off as a safety risk. – All surplus material, off cuts, and other debris resulting from the work shall be removed from site and disposed of at an appropriate site with the appropriate environmental and planning approvals in place. – Working areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day. – Contingency plan will be implemented in the event that contaminated soils are encountered during the works.

5.9 Traffic and transport

Issue	Description
Existing environment	<p>The proposal site is located on Nangar Road, a regional road approximately 12 km west of Canowindra. Vehicles accessing the site from Canowindra or Eugowra would travel via Nangar Road, which is a two-way, sealed road which connects with Fobes Eugowra Road and the Escort Way.</p> <p>Nangar Road is currently open in both directions through use of the temporary culvert causeway sidetrack but is limited to a single lane of traffic. Nangar Road services road users travelling between Canowindra and Eugowra and has a medium density of vehicles travelling on it daily.</p>
Potential impacts	<p>Are the proposed works likely to result in detours, disruptions or delays to traffic flow (vehicular, cycle and pedestrian) or access to properties or businesses?</p> <p>During construction Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>Nyrang Road would remain open with access proved through the culvert causeway sidetrack. Construction would generate increased road movements for the movement of equipment, plant and construction personnel, including contractors and workers.</p> <p>Heavy vehicle movements would be limited to site establishment and decommissioning to install and remove site facilities and heavy equipment. In addition to these, the transportation of materials to the proposal site and removal of spoil/excavated material would require heavy vehicle movements. Light vehicle movements would primarily occur in morning and afternoon/evening periods of each working day.</p> <p>The local road network can accommodate this minor increase in vehicle traffic and no major impacts are expected.</p> <p>The sidetrack currently in operation has traffic give way signs at either end of the track. This would be maintained during the construction period. However due to the increased activity at this section of Nangar Road during construction, additional traffic control (i.e. traffic lights) measures would be</p>

Issue	Description
	<p>deemed necessary and would remain in place outside working hours. Traffic control would ensure that there is no impact to public access for emergency services and residents evacuating in the event of an emergency.</p> <p>During Operation Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>Nyrang Road would resume normal capacity during operation which would reduce the stress on local traffic using the sidetrack and maintain a regular traffic flow.</p> <p>Are the proposed works likely to affect any other transport nodes or transport infrastructure (e.g. bus stops, bus routes) in the surrounding area? Result in detours or disruptions to traffic flow (vehicular, cycle and pedestrian) or access during operation?</p> <p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>The site has an existing school bus route which would be impacted by the proposal works (S459). Short-term delays would occur during construction as a result of the project.</p>
Proposed safeguards	<ul style="list-style-type: none"> – If road closures are required during construction, traffic control is to be implemented in accordance with Council requirements, AS 1742.3-2009 – <i>Manual of uniform traffic control devices, Roads and Maritime Traffic Control at Work Sites Manual</i> (RTA, 2010) and <i>Roads and Maritime QA Specification G10 Control of Traffic</i> (Roads and Maritime, 2008). – Develop and implement a TCP that would be in place for the entire duration of construction works. This plan should consider but not be limited to the following components: <ul style="list-style-type: none"> • Traffic flow management • Access and egress points • Parking and loading zones • Work zones • Speed limits • Emergency procedures • Schedule and phasing for construction activities • Public outreach – Traffic control would be in place for the duration of construction, ensuring there is no impact to public access for emergency vehicles and residents evacuating in the event of an emergency.

6. Summary of safeguards and environmental management measures

6.1 Safeguards and management measures

Table 6.1 details the safeguards and management measures that will be implemented to minimise the environmental impacts identified in section.

Table 6.1 Summary of management measures for the proposed works

Factor	Safeguards
Landform, geology and soils	Implement the Erosion and Sediment Control Plan as part of the Construction Environmental Management Plan that includes soil and erosion protection measures in accordance with <i>Managing Urban Stormwater: Soils and construction—Volume 1 (Landcom, 2004), Volume 2C Unsealed roads (DECC, 2008b) and Volume 2D, Main Road Construction (DECC, 2008c) (collectively referred to as the Blue Book)</i> .
	Erosion and sedimentation controls will be checked daily and maintained as required until ground stability is achieved.
	High risk soil erosion activities such as earthworks will not be undertaken immediately before or during high rainfall (i.e. >20 mm in any 24-hour period) or wind events.
	Locate stockpiles and construction materials away from vegetation, waterways and drainage lines, implement bunding practices where appropriate.
	Minimise exposure of soils and retain vegetation where practicable.
	Vehicle and machinery movement will be minimised across the site. Wherever possible, vehicles and machinery will be parked at the compound site and movement on site will be on foot.
	Construct temporary drainage structures in accordance with the 'Technical Guideline - Temporary Stormwater Drainage for Road Construction' (RMS 2011).
	Stockpiles will be designed, established, operated and decommissioned in accordance with the <i>RMS Stockpile Site Management Guidelines 2015</i> .
Contaminated land and acid sulfate soils	The rehabilitation of disturbed areas would be carried out progressively as construction stages are completed, and in accordance with: <ul style="list-style-type: none"> Landcom's "Blue Book" (4th Edition) on sediment and erosion control (Landcom 2004) RMS Landscape Guidelines (LGNSW 2019) RMS Guidelines for Batter Stabilisation Using Vegetation (RMS 2015a)
	In the event of an unexpected find of contaminated land or ASS, work would cease in the affected area and the Council project manager would be contacted for advice on how to proceed accordingly.
Water quality and hydrology	A spill kit will be always kept on site for potential chemical or fuel spills.
	Contractors will be trained in the correct use of a spill kit.
	All materials that have the potential to contaminate surface water or groundwater will be stored at least 40 m away from any watercourses and on flat grades.
	Erosion and sediment controls in accordance with Landcom's "Blue Book" (4th Edition) (refer Section 5.2).
	Visual monitoring of Nyrang Creeks water quality (i.e. turbidity, hydrocarbon spills/slicks, algal blooms, colour and odour) will be undertaken on a regular basis to identify any potential spills or deficient erosion and sediment controls. A comprehensive record will be kept of these inspections. If water quality deteriorates over consecutive monitoring inspections quantitative water quality testing should be undertaken to obtain a comprehensive understanding of creek health.
	Coffer damming would be utilised when removing the existing footings and concrete piers of the bridge whilst maintaining flow (if occurring) through the middle of the creek including fish passage.

Factor	Safeguards
	<p>When deconstructing/constructing the bridge a capture system will be installed across the creek to prevent any materials from entering the creek.</p> <p>If feasible, schedule construction works to minimise disruption to the creek during sensitive times such as spawning seasons for fish or other aquatic life.</p> <p>Works will be conducted during dry seasons or low-flow periods where possible.</p> <p>No works will be undertaken during heavy rain periods or where flooding warnings for the wider area are issued. During works weather forecasts would be monitored daily.</p> <p>All work sites will be kept in a clean and tidy condition to prevent waste/litter from entering watercourses.</p>
Biodiversity	<p>As part of the site induction process, provide all site personnel with information on the biodiversity values of the study area, including potential threatened species habitat, threatened ecological communities, no-go areas and responsibilities under relevant environmental legislation, including but not limited to the EP&A Act, BC Act and EPBC Act. Refer to the threatened species habitat descriptions detailed in Appendix D.</p> <p>Should unexpected, threatened fauna or flora be identified at any time during construction, cease work immediately in the area to prevent further harm to the individual. Contact Council's Environmental Officer and a suitably qualified ecologist to determine if further assessment or management plans are required.</p> <p>No removal or disturbance of vegetation outside the proposal area is to occur without further assessment.</p> <p>Establish exclusion zones in accordance with <i>Guide 2 Exclusion Zones of Roads and Traffic Authority Biodiversity Guidelines</i> (Transport Roads and Traffic Authority, 2011) to ensure clearing does not extend beyond the approved area.</p> <p>Trees are to be removed in accordance with <i>Guide 4: Clearing of Vegetation and Removal of Bushrock of Roads and Traffic Authority Biodiversity Guidelines</i> (Transport Roads and Traffic Authority, 2011).</p> <p>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.</p> <p>No HBTs (including dead/stag trees and hollow bearing stumps) are to be removed without further assessment for fauna species or hollows by a suitably qualified person.</p> <p>Coarse woody debris (CWD) produced from vegetation clearing is to be placed in areas of existing vegetation within the assessed study area. CWD is not to be pushed into adjoining vegetation.</p> <p>If any damage occurs to vegetation outside of the boundaries of the work site as a result of the proposal, the Council Project Manager will be notified and will establish strategies for mitigation of impacts and site restoration.</p> <p>Implement wash-down procedures detailed in DPIE's (2020) hygiene protocol for vehicles and heavy machinery.</p> <p>Manage vegetation within the road reserve and adjacent areas of vegetation clearing in accordance with <i>Guide 6: Weed Management of Roads and Traffic Authority Biodiversity Guidelines</i> (Transport Roads and Traffic Authority, 2011) to reduce invasion of priority weed species.</p> <p>Use weed-free topsoil in any landscaping works post-construction and revegetate disturbed sites with locally indigenous species.</p> <p>Construction machinery should be washed prior to entering and leaving site to ensure weed propagules are not transported.</p> <p>Transport of any soil or gravel material from one site to another is prohibited.</p> <p>The rehabilitation of disturbed areas will be carried out progressively as construction stages are completed, and in accordance with:</p> <ul style="list-style-type: none"> – Landcom's "Blue Book" (4th Edition) on sediment and erosion control – <i>RMS Landscape Guidelines</i> – <i>RMS Guidelines for Batter Stabilisation Using Vegetation</i>

Factor	Safeguards
	Council is to consult with Fisheries prior to the commencement of works to confirm if the proposal can be undertaken in accordance with the Code of Practice and if a permit is required.
Aboriginal heritage	<p>All personnel working on site will receive training to ensure awareness of relevant statutory responsibilities.</p> <p>If Aboriginal heritage items are uncovered during the works, all works in the vicinity of the find must cease and the Council's Environmental Officer will be contacted immediately, and the <i>Standard Management Procedure - Unexpected Heritage Items</i> (RMS, 2015b) will be followed.</p>
Non-Aboriginal heritage	In the event of an unexpected find of an archaeological deposit (or suspected item), works on site would cease in the affected area and the Council project manager would be contacted immediately for advice on how to proceed.
Noise	<p>The works will be carried out during normal work hours (i.e. 7:00 am to 6:00 pm Monday to Friday; 8:00 am to 1:00 pm Saturdays) which comply with the <i>NSW Interim Construction Noise Guideline, 2016</i>. Any work that is performed outside normal work hours or on Sundays or public holidays requires approval from Council.</p> <p>Council or nominated contractors will notify affected sensitive receivers if any work is to occur outside of normal work hours.</p> <p>All employees, contractors and subcontractors are to receive an environmental induction. The induction must at least include:</p> <ul style="list-style-type: none"> – All proposal specific and relevant standard noise and vibration mitigation measures – Relevant licence and approval conditions – Permissible hours of work – Any limitations on high noise generating activities – Location of nearest sensitive receivers – Construction employee parking areas – Designated loading/unloading areas and procedures – Site opening/closing times (including deliveries) – Environmental incident procedures <p>Regularly inspect and maintain equipment to ensure it is in good working order.</p> <p>Use quieter and less vibration emitting construction methods where feasible and reasonable.</p> <p>Neighbouring property access to be maintained. Residents affected by the proposal would be notified of the works in advance. Contact details would be provided for queries or complaints.</p> <p>Plant and equipment will be switched off when not in use.</p> <p>Landowners will be notified prior to commencement of activities that may result in noise disturbance. During the project, the contact details of a representative of the company will be provided to receive and address noise complaints.</p>
Air quality	<p>Dust generated during construction will be visually monitored by construction staff. If dust generation is evident, measures such as water sprays, minimising vehicle movements and reducing vehicle speeds would be implemented immediately.</p> <p>Stabilisation of disturbed areas will be undertaken as soon as practicable.</p> <p>Plant and machinery will be turned off when not in use and maintained in accordance with Australian standards or manufactures recommendations.</p> <p>Construction plant and equipment are to be maintained in good working order.</p> <p>Any dust complaint will be investigated as soon as possible, and measures taken to manage any impacts identified.</p> <p>No burning of any materials will occur.</p> <p>During transportation, loads will be adequately covered.</p>
Waste and chemical management	<p>All site will be managed in accordance with the waste reduction hierarchy of avoid reduce, re-use and recycle as per the <i>Waste Avoidance and Resource Recovery Act 2001</i>.</p> <p>Wastes will be classified prior to disposal and recycled where possible.</p> <p>Liquid waste is to be contained in appropriate sealed containers.</p>

Factor	Safeguards
	<p>Waste will only be transported to a site that may lawfully receive the material. A Section 143 Certificate (POEO Act) will be required from the receiving premises to confirm the necessary environmental and planning approvals are in place.</p> <p>Cease work in the immediate vicinity of any areas of suspected contamination that are identified prior to or during work. Ensure that these areas are not disturbed and are cordoned off as a safety risk.</p> <p>All surplus material, off cuts, and other debris resulting from the work shall be removed from site and disposed of at an appropriate site with the appropriate environmental and planning approvals in place.</p> <p>Working areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day.</p> <p>Contingency plan will be implemented in the event that contaminated soils are encountered during the works.</p>
Traffic and transport	<p>If road closures are required during construction, traffic control is to be implemented in accordance with Council requirements, AS 1742.3-2009 – <i>Manual of uniform traffic control devices, Roads and Maritime Traffic Control at Work Sites Manual</i> (RTA, 2010) and <i>Roads and Maritime QA Specification G10 Control of Traffic</i> (Roads and Maritime, 2008).</p> <p>Develop and implement a TCP that would be in place for the entire duration of construction works. This plan should consider but not be limited to the following components:</p> <ul style="list-style-type: none"> – Traffic flow management – Access and egress points – Parking and loading zones – Work zones – Speed limits – Emergency procedures – Schedule and phasing for construction activities – Public outreach <p>Traffic control would be in place for the duration of construction, ensuring there is no impact to public access for emergency vehicles and residents evacuating in the event of an emergency.</p>
Visual amenity/landscape	<p>Construction areas are to be maintained in an orderly manner and inspected daily.</p> <p>Any high-rise equipment such as cranes, would be lowered (if possible) when not in use on-site.</p> <p>Disturbed areas would be rehabilitated immediately following completion of construction.</p> <p>All temporary structures, equipment and waste is to be removed at the completion of works.</p>
Socio-economic	<p>Property owners and residents adjacent to the proposal site will be contacted via letter box drops four weeks before the commencement of works. One day before construction, residents will be notified again by door knock, or letter box drop if they are not present. Information will be provided on the proposed works and working hours, and a contact name and number will be provided for any questions or concerns.</p>
Hazards and risk	<p>Bushfire hazard mapping and consultation with local fire authorities would occur to determine the specific fire danger rating for the local area.</p> <p>Firefighting equipment, such as hoses, pumps, and fire extinguishers would be easily accessible on site and in good working condition.</p> <p>Any long grass in the work area will be cut prior to commencing works.</p>
Cumulative impacts	<p>If deemed necessary works will be scheduled in conjunction with other utility and road projects occurring in the local area, such that heavy vehicle movements and high noise generating activities are undertaken at differing times and spread out throughout the project.</p>

7. Conclusion

This REF has been prepared in accordance with the provisions of Section 5.5 of the EP&A Act, taking into account to the fullest extent possible, all matters affecting or likely to affect the environment as a result of the proposal.

The proposal would provide the following benefits:

- **Improved safety** – The new bridge would be engineered to current Australian safety standards which reduces the risk of future collapses.
- **Long-term accessibility** – Although the temporary culvert side-track provides an access link between Canowindra and Eugowra, future flooding events are expected to terminate this track. As such, a new bridge would provide long term accessibility to local residents and minimises the occurrence of disrupted access in the future.
- **Emergency response** – Bridges are essential for emergency services to reach affected areas after a flood event. A new bridge ensures that emergency responders can reach those in need promptly and safely in locations west of Canowindra.
- **Environmental considerations** – Although there would be short term minor impacts on the environment during construction works, a new bridge with rip rap scour protection would stabilize the creek banks and protect against further soil erosion along the creek banks.
- **Community endorsement** – The local community has raised collective concerns on the current closure of Nyrang Bridge and the culvert side track currently in operation. The challenging corners of the track requires vehicles to slow down considerably from either direction to navigate turns which has resulted in several incidents and a fatality. A new bridge would address these concerns and would be heavily endorsed by the local community.

Where possible, impacts would be avoided or minimised through the implementation of safeguards and management measures outlined in this review of environmental factors.

This REF has considered and assessed these impacts in accordance with section 171 of the EP&A Regulation and the requirements of the EPBC Act. Based on the assessment contained in this REF, it is considered that the proposal is not likely to have a significant impact upon the environment or any threatened species, populations or communities. Accordingly, an EIS is not required, nor is the approval of the Minister for Planning and Public Spaces.

8. Certification, review and decision

This Review of Environmental Factors provides a true and fair review of the proposal in relation to its potential effects on the environment. It addresses to the fullest extent possible all matters affecting or likely to affect the environment as a result of the proposal. It identifies the likely impacts of the proposal on the environment and details the environmental safeguards and mitigation measures to be implemented to minimise the potential impact to the environment. In light of the above assessment of the proposed activity, it is considered that the overall impact on the environment is likely to be minimal and therefore acceptable. The long-term benefits of the activity will have a cumulative positive impact on the safety of local road user off Nangar Road and the activity should proceed accordingly.

REF author:

Signature: 

Name: Hannah Marsh

Title: Graduate Environmental Scientist

Date: 12/10/2023

Reviewed and endorsed by:

Signature: 

Name: Dharini Collaguazo

Title: Senior Environmental Planner

Date: 12/10/2023

Authorising manager's approval:

Signature: 

Name: Daniel Mees

Title: Manager, Orange

Date: 12/10/2023

Council review by:

Signature: 

Name: Warwick Dayman

Title: Environmental Officer

Date: 9. 10. 23

Council approval by:

Signature: 

Name: MATTHEW CHRISTENSEN

Title: DEPUTY GENERAL MANAGER

Date: 17/10/2023

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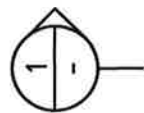
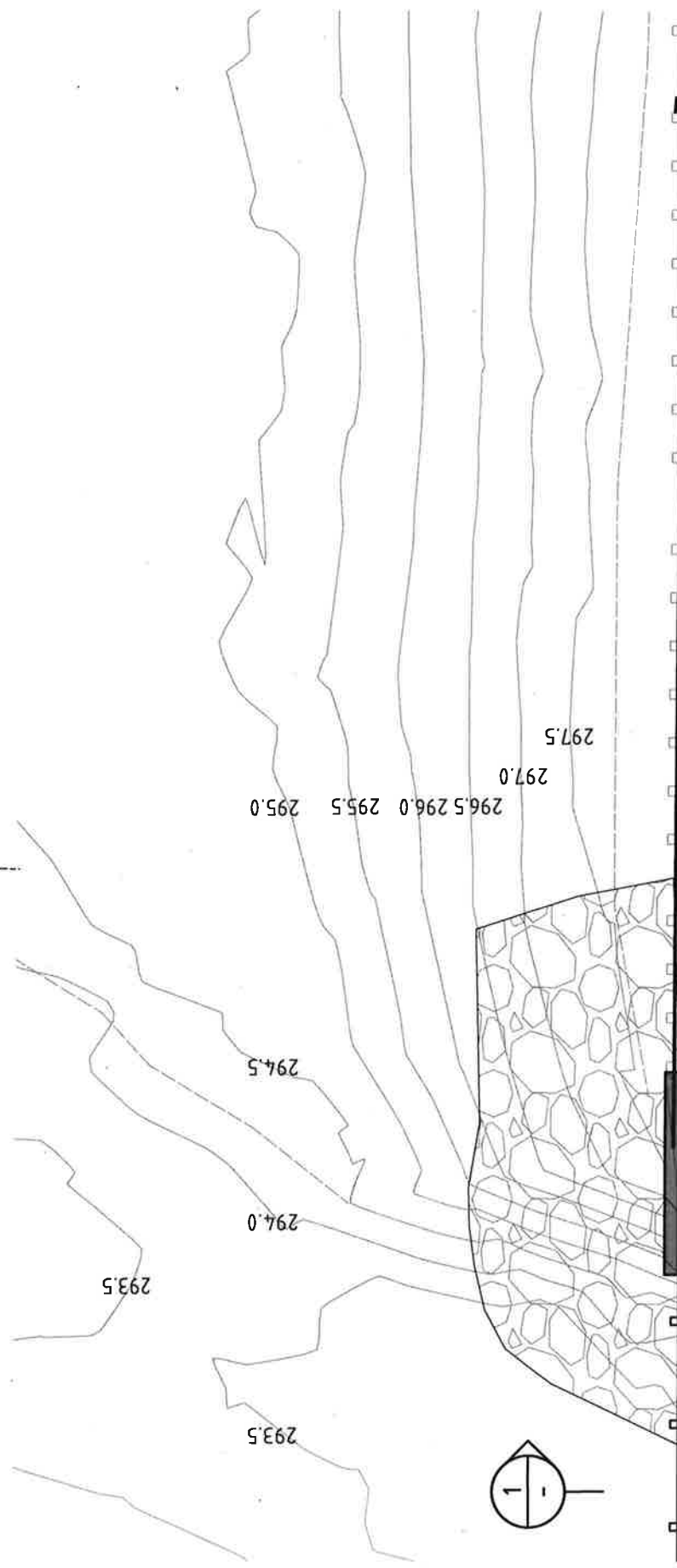
Appendices

Appendix A

Concept plans

58.740	297.67
58.740	297.67

MC00



CH 58.740
E 644063.333
N 6287615.571

CONTROL LINE MC00

TO CANOWINDRA

EP 80.275

BH

Appendix B

Section 171 checklist

Section 171 checklist

The following factors, listed in Section 171 of the *Environmental Planning and Assessment Regulation 2021*, have also been considered to assess the likely impacts of the proposal on the natural and built environment.

Factor	Impact
<p>a) Any environmental impact on a community?</p> <p>The community would not be affected through declines in the local environment as a result of the proposal. Mitigation measures have been designed to reduce environmental impacts on the community to negligible levels (refer to Section 5).</p>	Short-term minor negative
<p>b) Any transformation of a locality?</p> <p>Temporary transformations of the locality are restricted to the site and comprise the works detailed in Section 5. After completion of the work, permanent transformations would be restricted to the site. No significant transformation of the locality would occur as a result of the proposal.</p>	Short-term minor negative
<p>c) Any environmental impact on the ecosystems of the locality?</p> <p>The ecosystems of the locality would not be affected through declines in local environmental values (e.g. biodiversity, physical environment) as a result of the proposal. Mitigation measures have been designed to reduce environmental impacts (refer to Section 5).</p>	Short-term minor negative
<p>d) Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality?</p> <p>The aesthetic, recreational, scientific or other environmental qualities or value of the locality are not expected to be impacted by the proposal. The character of the general area would largely remain the same post-construction and no significant visual impact or recreational impediment is expected. No reduction in the quality of environmental values associated with noise, water, soil and air quality or significant decreases in biodiversity are likely to occur due to the mitigation measures provided in Section 5 of this REF. No significant changes to the locality are expected to occur.</p> <p>No long-term changes in the character or nature of the site or its immediate environs are expected as a result of the proposal.</p>	Short-term minor negative
<p>e) Any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations?</p> <p>No long-term changes to the character or nature of the site or its immediate environs are expected as a result of the proposal.</p>	Negligible
<p>f) Any impact on the habitat of protected fauna (within the meaning of the <i>National Parks and Wildlife Act 1974</i>)?</p> <p>A small area of habitat would be disturbed in order to complete the proposal. With effective implementation of the safeguards provided in Section 5 of this REF, the proposal is not considered likely to have a significant negative impact on the habitat of any other protected fauna.</p>	Short-term minor negative
<p>g) Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air?</p> <p>With effective implementation of the safeguards provided in Section 5 of this REF, the proposal is not considered likely to significantly endanger any species of animal, plant or other form of life.</p>	Short-term minor negative
<p>h) Any long-term effects on the environment?</p> <p>No significant negative long-term impacts are considered likely with effective implementation of the proposed mitigation measures in Section 5 of this REF.</p>	Negligible
<p>The proposal would have beneficial long-term impacts by providing safe access across Nyrang Creek.</p>	Long-term positive
<p>i) Any degradation of the quality of the environment?</p> <p>No significant degradation of the quality of the environment is expected with effective implementation of the safeguards in Section 5 of this REF.</p>	Short-term minor negative
<p>j) Any risk to the safety of the environment?</p> <p>The primary objective of the proposal is to improve safety for road users of Nangar Road. The proposal is unlikely to pose any significant risk to the safety of the environmental attributes outlined in Section 5. Any possible impacts would be minimised with the implementation of the safeguards in Section 5 of this REF.</p>	Short-term minor negative

Factor	Impact
<p>k) Any reduction in the range of beneficial uses of the environment?</p> <p>The proposal is not likely to result in any reduction in the range of beneficial uses of the environment.</p>	Nil
<p>l) Any pollution of the environment?</p> <p>Waste materials, fuel spills and sediment have the potential to cause pollution to the environment. However, given the proposed safeguards detailed in Section 5 of this REF, pollution to the environment is unlikely to occur.</p>	Short-term minor negative
<p>m) Any environmental problems associated with the disposal of waste?</p> <p>All waste generated by the proposal would be disposed of in a manner which would not damage or disturb any native flora or fauna or the physical environment. The disposal of waste would be in accordance with EPA approved methods of waste disposal. Safeguards detailed in Section 5 of this REF would protect the environment from problems associated with all waste disposal.</p>	Nil
<p>n) Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply?</p> <p>The proposal does not create any demand for resources that are in short supply nor is it likely to result in an increased demand on any natural resources that are likely to become in short supply. Council would attempt to draw supplies and resources from established suppliers having appropriate environmental approvals and standards.</p>	Nil
<p>o) Any cumulative environmental effect with other existing or likely future activities?</p> <p>The proposal would have minor cumulative impacts (e.g. resource consumption) but is unlikely to significantly contribute to any cumulative impacts.</p>	Nil
<p>p) Any impact on coastal processes and coastal hazards, including those under projected climate change conditions?</p> <p>No impact on coastal process and coastal hazards would be applicable to this proposal.</p>	Nil
<p>q) Applicable local strategic planning statements, regional strategic plans or district strategic plans made under the Act, Division 3.1?</p> <p>No strategic planning statements, regional or district plans would be applicable to this proposal.</p>	Nil
<p>r) Other relevant environmental factors?</p> <p>Environmental factors impacted by the proposal are discussed in Section 5 of this REF. With the implementation of the safeguards given in Section 5 in this REF, no additional impacts would be generated by the proposal etc.</p>	Nil

Appendix C

EPBC Act search results

the EPBC Act in the area you have selected. Please see the caveat for interpretation provided here.

dated: 18-Sep-2023

ry

rs of NES

Matters Protected by the EPBC Act
Information

ledgements

<u>Properties:</u>	None
<u>Age Places:</u>	None
<u>International Importance (Ramsar</u>	4
<u>Reef Marine Park:</u>	None
<u>h Marine Area:</u>	None
<u>ned Ecological Communities:</u>	3
<u>ned Species:</u>	38
<u>ry Species:</u>	10

ers Protected by the EPBC Act

report summarises other matters protected under the Act that may relate to the area y
 e required for a proposed activity that significantly affects the environment on Commo
 n is outside the Commonwealth land, or the environment anywhere when the action is t
 n land. Approval may also be required for the Commonwealth or Commonwealth agenc
 hat is likely to have a significant impact on the environment anywhere.

protects the environment on Commonwealth land, the environment from the actions tal
 n land, and the environment from actions taken by Commonwealth agencies. As heritag
 of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritag
 n Heritage place. Information on the new heritage laws can be found at
www.environment.gov.au/parks-heritage/heritage

e required for activities in or on a Commonwealth area that may affect a member of a l
 ogical community, a member of a listed migratory species, whales and other cetaceans
 species.

<u>h Lands:</u>	1
<u>h Heritage Places:</u>	None
<u>Species:</u>	17
<u>ther Cetaceans:</u>	None
<u>ts:</u>	None
<u>h Reserves Terrestrial:</u>	None
<u>ine Parks:</u>	None
<u>l to the Survival of Marine Turtles:</u>	None

nation

e report provides information that may also be relevant to the area you have

<u>itory Reserves:</u>	1
<u>st Agreements:</u>	None
<u>ortant Wetlands:</u>	None

upstream from
Ramsar site

<u>e lakes</u>	500 - 600km upstream from Ramsar site	In fe
	600 - 700km upstream from Ramsar site	In fe
<u>and lakes alexandrina and albert wetland</u>	800 - 900km upstream from Ramsar site	In fe

Threatened Ecological Communities

[Resource

Threatened ecological communities where the distribution is well known, maps are derived from vegetation maps, remote sensing imagery and other sources. Where threatened ecological communities are less well known, existing vegetation maps and point location data are used to derive distribution maps.

Extinct, Disallowed and Ineligible are not MNES under the EPBC Act.

Name	Threatened Category	Presence Text	Buffer
<u>Salicornia microcarpa</u> <u>lands and Derived Native</u> <u>South-eastern Australia</u>	Endangered	Community likely to occur within area	In fe

<u>Wetland Woodland on Alluvial</u>	Endangered	Community may occur within area	In fe
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<u>Low Box-Blakely's Red</u> <u>Woodland and Derived</u> <u>land</u>	Critically Endangered	Community likely to occur within area	In fe
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Threatened Species

[Resource

Extinct, Conservation Dependent and Extinct are not MNES under the EPBC Act.
current name ID.

Name	Threatened Category	Presence Text	Buffer
------	---------------------	---------------	--------

habitat known to
occur within area

loptilus

ittern [1001]

Endangered

Species or species
habitat may occur
within area

In fe

inea

iper [856]

Critically Endangered

Species or species
habitat may occur
within area

In fe

fimbriatum

ockatoo [768]

Endangered

Species or species
habitat may occur
within area

In bu

us lathami lathami

Glossy Black-Cockatoo

Vulnerable

Species or species
habitat likely to occur
within area

In fe

umnus victoriae

eeper (south-eastern)

Vulnerable

Species or species
habitat known to
occur within area

In fe

cos

29]

Vulnerable

Species or species
habitat likely to occur
within area

In fe

a

reater [470]

Vulnerable

Species or species
habitat known to
occur within area

In fe

udacutus

l Needletail [682]

Vulnerable

Species or species
habitat known to
occur within area

In fe

within area

cucullata cucullata

Hooded Robin, Hooded
eastern) [67093]

Endangered

Species or species
habitat likely to occur
within area

In fe

rysostoma

Parrot [726]

Vulnerable

Species or species
habitat may occur
within area

In fe

dagascariensis

n, Far Eastern Curlew

Critically Endangered

Species or species
habitat may occur
within area

In fe

sonii

[738]

Vulnerable

Species or species
habitat known to
occur within area

In fe

stralis

nted Snipe [77037]

Endangered

Species or species
habitat likely to occur
within area

In fe

guttata

ail [59398]

Vulnerable

Species or species
habitat known to
occur within area

In fe

anus

bidyan [76155]

Critically Endangered

Species or species
habitat likely to occur
within area

In bu

macquariensis

171]

Endangered

Species or species
habitat may occur
within area

In bu

habitat may occur
within area

dwyeri

Pied Bat, Large Pied Bat	Vulnerable	Species or species habitat may occur within area	In fe
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maculatus maculatus (SE mainland population)

oll, Spotted-tail Quoll, outheastern mainland 5184]	Endangered	Species or species habitat may occur within area	In fe
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orbeni

e-eared Bat, South-eastern at [83395]	Vulnerable	Species or species habitat likely to occur within area	In fe
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cinereus (combined populations of Qld, NSW and the ACT)

ed populations of New South Wales and the ital Territory) [85104]	Endangered	Species or species habitat known to occur within area	In fe
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cephalus

Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area	In fe
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akoolica

Endangered	Species or species habitat likely to occur within area	In fe
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ersonii

ress [10976]	Vulnerable	Species or species habitat likely to occur within area	In fe
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within area

ta
oea, Mountain Swainson-
rple Pea [7580] Endangered

Species or species
habitat may occur
within area In bu

ale
ax, Toadflax [15202] Vulnerable

Species or species
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within area In fe

forsteri listed as Tylophora linearis
Endangered

Species or species
habitat may occur
within area In fe

ulchella
orm-lizard, Pink-tailed
[1665] Vulnerable

Species or species
habitat likely to occur
within area In fe

ory Species **[Resource**

e **Threatened Category** **Presence Text** **Buffer**
ne Birds

ift [678] Species or species
habitat likely to occur
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estrial Species

udacutus
Needletail [682] Vulnerable Species or species
habitat known to
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I [644] Species or species
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within area

linea

piper [856]

Critically Endangered

Species or species
habitat may occur
within area

In fe

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piper [858]

Species or species
habitat may occur
within area

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lwickii

e, Japanese Snipe [863]

Species or species
habitat may occur
within area

In fe

dagascariensis

n, Far Eastern Curlew

Critically Endangered

Species or species
habitat may occur
within area

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wealth area listed below may indicate the presence of Commonwealth land in this
y of the data source, all proposals should be checked as to whether it impacts on
h area, before making a definitive decision. Contact the State or Territory govern
r further information.

h Land Name

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Threatened Category

Presence Text

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			habitat may occur within area overfly marine area	
<u>nata</u> andpiper [874]			Species or species habitat may occur within area	In fe
<u>inea</u> iper [856]	Critically Endangered		Species or species habitat may occur within area overfly marine area	In fe
<u>otos</u> piper [858]			Species or species habitat may occur within area overfly marine area	In fe
<u>ilans as Chrysococcyx osculans</u> uckoo [83425]			Species or species habitat likely to occur within area overfly marine area	In fe
<u>lwickii</u> e, Japanese Snipe [863]			Species or species habitat may occur within area overfly marine area	In fe
<u>cogaster</u> Sea-Eagle [943]			Species or species habitat likely to occur within area	In fe
<u>udacutus</u> I Needletail [682]	Vulnerable		Species or species habitat known to occur within area	In fe

			habitat may occur within area overfly marine area	
<u>leuca</u> er [612]			Species or species habitat known to occur within area overfly marine area	In fe
<u>rysostoma</u> parrot [726]	Vulnerable		Species or species habitat may occur within area overfly marine area	In fe
<u>dagascariensis</u> n, Far Eastern Curlew	Critically Endangered		Species or species habitat may occur within area	In fe
<u>stralis as Rostratula benghalensis (sensu lato)</u> nted Snipe [77037]	Endangered		Species or species habitat likely to occur within area overfly marine area	In fe

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Territory Reserves				[Resource
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Referrals				[Resource
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alth and State/Territory reserves;
of listed threatened, migratory and marine species;
ened ecological communities; and
ation that may be useful as an indicator of potential habitat value.

MER

tended to be exhaustive and should only be relied upon as a general guide as mapped data is not available
ities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report
n under the EPBC Act should consider the limitations noted below and whether additional information is req
ion of MNES and other protected matters.

ailable to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that c
icated in general terms. It is the responsibility of any person using or relying on the information in this report
umstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of :
To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or d
or indirectly through the use of, or reliance

SOURCES

ical communities

logical communities where the distribution is well known, maps are generated based on information containe
aps and remote sensing imagery and other sources. Where threatened ecological community distributions a
maps and point location data are used to produce indicative distribution maps.

ory and marine species

ory and marine species distributions have been discerned through a variety of methods. Where distributions
ributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terra
described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

ition is available for a species or large number of maps are required in a short time-frame, maps are derived
e cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hu
or by using topographic features (national park boundaries, islands, etc.).

of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or
bution maps. More detailed distribution mapping methods are used to update these distributions

IONS

es and ecological communities have not been mapped and do not appear in this report:

species listed as extinct or considered vagrants;

tly listed species and ecological communities;

migratory and listed marine species, which are not listed as threatened species; and

pecies that are very widespread, vagrant, or only occur in Australia in small numbers.

os have been mapped, but may not cover the complete distribution of the species:

ory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded

have only been mapped for breeding sites near the Australian continent

may be important for the protection of the Commonwealth Marine environment.

ata for the feature group (using the Resource Information link) for the currency of the information.

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ent of Environmental and Heritage Protection, Queensland
ent of Parks and Wildlife, Western Australia
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1 Government – Australian Antarctic Data Centre
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1 Government National Environmental Science Program
1 Institute of Marine Science
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ups and individuals

Appendix D

Likelihood of Occurrence Table

Threatened species, populations and ecological communities, and migratory species (listed under the BC Act and/or EPBC Act) that are known, or have potential, to occur within a 10 km radius of the Study Area have been considered in this section. The likelihood of occurrence within the Study Area of each species or TEC was assessed using the criteria described in Table D.1 and Table D.2. The findings presented in Table D.3. This assessment was undertaken based on previous records, the results of the field survey and known species habitat requirements. Table D.3 also provides an assessment of the potential impact of the proposal on each species and TEC.

Table D.1 *Likelihood of occurrence criteria*

Likelihood Rating	Criteria
Recorded	The species was recorded within the Study Area during the field surveys.
High	<p>It is likely that a species would inhabit or utilise habitat within the Study Area. Criteria for this category may include:</p> <ul style="list-style-type: none"> – Species recently and/or regularly recorded in contiguous or nearby habitat. – High quality habitat or resources present within the Study Area. – Species is known or likely to maintain a resident population surrounding the Study Area. – Species is known or likely to visit during migration or in response to seasonal availability of resources present on site.
Moderate	<p>Potential habitat for a species occurs within the Study Area. Criteria for this category may include:</p> <ul style="list-style-type: none"> – Species infrequently recorded in the Study Area and surrounds (i.e. vagrant individuals). – Habitat present, but poor quality, depauperate or modified types and/or resources. – Species has potential to utilise habitat during migration or seasonal availability of resources. – Species unlikely to maintain sedentary populations, however, may seasonally utilise resources within the study area opportunistically during variable seasons or migration. – Cryptic flora species with potential habitat within the Study Area that have not been targeted by surveys (for example, surveys were not undertaken with the flowering season).
Low	<p>It is unlikely that the species inhabits the area, if it did, it would likely be a transient visitor. Criteria for this category may include:</p> <ul style="list-style-type: none"> – Species not recently recorded (within last 20 years) in the study area or is beyond the known geographic range. – Species dependent on specific habitat types or resources that are not present in the study area. – Highly mobile species that may on occasion utilise habitat within Study Area, though habitat present is of low quality.
Nil	No records in locality, no suitable habitat in study area, outside known range.

Table D.2 *Potential for negative impact*

Likelihood	Definition
None	Species absent.
	Species would not be directly or indirectly impacted by the proposal.
Low	Species may be indirectly impacted by the proposal.
	May include the removal of small amounts of broadly suitable/ low quality habitat.
Moderate	Species is likely to be directly impacted through the removal/disturbance of habitat resources potentially used by the species, such as HBTs, trees capable of supporting large stick nests or bush rock.
	Species is highly mobile and/or has a comparably larger home range.
	Species largely able to avoid construction impacts.
High	Species would be directly impacted through the removal/disturbance of occupied habitat.
	Species is generally immobile and/or has a small home range.
	May be more vulnerable to construction impacts than other species (if present) e.g., if breeding habitat occurs.
	Would require further targeted surveys to verify the species existence within the Study Area, e.g., habitat tree survey required.

Table D.3 Likelihood of occurrence assessment and potential level for impact assessment

Scientific Name	BS Status	EPBC Status	Source	Habitat Association	Likelihood of Occurrence	Potential for Impact
Amphibians						
<i>Crinia sloanei</i> Sloane's Froglet	E	E	Species or habitat may occur within area (DCCEW 2023a)	Most records are from the Darling Riverine Plains, NSW South Western Slopes and Riverina bioregions. It has not been recorded recently in the northern part of its range and has only been recorded infrequently in the southern part of its range in NSW. Typically associated with periodically inundated areas in grassland, woodland and disturbed habitats.	Low Suitable habitat present within the study area, however no records within the locality.	Low Low likelihood of occurrence.
Birds						
<i>Anthochaera phrygia</i> Regent Honeyeater	CE	CE	Species or habitat may occur within area (DCCEW 2023a)	Mainly inhabits temperate woodlands and open forests of the inland slopes of south-east Australia. Only three known key breeding regions remaining: north-east Victoria (Chiltern-Albury), and in NSW at Capertee Valley and the Bundarra-Barraba region. Very patchy distribution in NSW, mainly confined to the two main breeding areas and surrounding fragmented woodlands. In some years flocks converge on flowering coastal woodlands and forests. Inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River Sheoak. Inhabits woodlands that support a significantly high abundance and species richness of bird species. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes. Key eucalypt species include Mugga Ironbark, Yellow Box, White Box and Swamp Mahogany. Flowering of associated species such as Thin-leaved Stringybark Eucalyptus eugenioides and other Stringybark species, and Broad-leaved Ironbark E. fibrosa can also contribute important nectar flows at times. Nectar and fruit from the mistletoes Amyema miquelii, A. pendula and A. cambagei are also utilised.	Low Suitable habitat present however no records within the locality.	Low Low likelihood of occurrence.
<i>Numenius madagascariensis</i> Eastern Curlew, Far Eastern Curlew		CE	Species or habitat may occur within area (DCCEW 2023a)	Occurs across the entire coast but is mainly found in estuaries such as the Hunter River, Port Stephens, Clarence River, Richmond River and ICOLLs of the south coast. Generally occupies coastal lakes, inlets, bays and estuarine habitats, and is mainly found in intertidal mudflats and sometimes saltmarsh of sheltered coasts in NSW. Rarely seen inland.	Nil No records within the locality, no suitable habitat present.	None Species absent.

Scientific Name	BS Status	EPBC Status	Source	Habitat Association	Likelihood of Occurrence	Potential for Impact
<i>Lathamus discolor</i> Swift Parrot	E	CE	6 records within 10km (DPE 2023a)	Migrates from Tasmania to south-eastern Australia in the autumn and winter months. Mostly occurs on the coast and south west slopes in NSW. Occurs on the mainland in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations. Favoured feed trees include winter flowering species such as Swamp Mahogany, Spotted Gum, Red Bloodwood, Forest Red Gum, Mugga Ironbark, and White Box.	Moderate Recent sightings within the locality, suitable habitat present.	Low Potential habitat for this species would not be removed.
<i>Calidris ferruginea</i> Curlew Sandpiper	E	CE	Species or species habitat may occur within area (DCCEW 2023a)	Distributed around most of the Australian coastline. Occurs along the entire coast of NSW, particularly in the Hunter Estuary, and sometimes in freshwater wetlands in the Murray-Darling Basin. Inland records are probably mainly of birds pausing for a few days during migration. Migrates to Australia for the non-breeding period, arriving between August and November, and departing between March and mid-April. Generally occupies littoral and estuarine habitats, and is mainly found in intertidal mudflats of sheltered coasts in NSW. Also occurs in non-tidal swamps, lakes and lagoons on the coast and sometimes inland. Forages in or at the edge of shallow water, occasionally on exposed algal mats or waterweed, or on banks of beach-cast seaweed or seaweed.	Nil No records within the locality, no suitable habitat present.	None Species absent.
<i>Callocephalon fimbriatum</i> Gang-gang Cockatoo	V	E	Species or species habitat may occur within area (DCCEW 2023a)	Distributed from the south-east coast to the Hunter region, and inland to the Central Tablelands and south-west slopes in NSW. Occurs regularly in the ACT. It Rare at the extremities of its range, with isolated records known from as far north as Coffs Harbour and as far west as Mudgee. In spring and summer the species is generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In autumn and winter, the species often moves to lower altitudes in drier more open eucalypt forests and woodlands, particularly box-gum and box-ironbark assemblages, or in dry forest in coastal areas and often found in urban areas.	Low No records within the locality, suitable habitat present.	Low Species unlikely to occur in study area.
<i>Melanodryas cucullata cucullata</i> South-eastern Hooded Robin, Hooded Robin (south-eastern)	V		Species or species habitat may occur within area (DCCEW 2023a)	Found throughout much of inland NSW, with the exception of the extreme north-west, where it is replaced by subspecies <i>picata</i> . Prefers lightly wooded country, usually open eucalypt woodland, Acacia scrub and mallee, often in or near clearings or open areas. Requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses.	Nil No records within the locality, suitable habitat present.	None Species unlikely to occur in study area

Scientific Name	BS Status	EPBC Status	Source	Habitat Association	Likelihood of Occurrence	Potential for Impact
<i>Rostratula australis</i> Australian Painted Snipe	E	E	Species or species habitat known to occur within area (DCCEW 2023a)	In NSW many records are from the Murray-Darling Basin including the Paroo wetlands, Lake Cowal, Macquarie Marshes, Fivebough Swamp and more recently, swamps near Balidale and Wanganella. Other important locations with recent records include wetlands on the Hawkesbury River, the Clarence and lower Hunter Valleys. Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber. Forages nocturnally on mudflats and in shallow water.	Nil No records within the locality, no suitable habitat present.	None Species absent.
<i>Lophochroa leadbeateri</i> Eastern Major Mitchell's Cockatoo	V		Species or species habitat may occur within area (DCCEW 2023a)	Found across the arid and semi-arid inland, from south-western Queensland south to north-west Victoria, through most of South Australia, north into the south-west Northern Territory and across to the west coast between Shark Bay and about Jurien. In NSW it is found regularly as far east as about Bourke and Griffith, and sporadically further east than that. Inhabits a wide range of treed and treeless inland habitats, always within easy reach of water. Feeds mostly on the ground, especially on the seeds of native and exotic melons and on the seeds of species of saltbush, wattles and cypress pines. Normally found in pairs or small groups, though flocks of hundreds may be found where food is abundant. Nesting, in tree hollows, occurs throughout the second half of the year. nests are at least 1 km apart, with no more than one pair every 30 square kilometres.	Low No records within the locality, suitable habitat present.	Low Species unlikely to occur in study area
<i>Botaurus poiciloptilus</i> Australasian Bittern	E	E	Species or species habitat may occur within area (DCCEW 2023a)	Widespread but uncommon over south-eastern Australia. Found over most of NSW except for the far north-west. Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (<i>Typha</i> spp.) and spikerushes (<i>Eleocharis</i> spp.). Hides during the day amongst dense reeds or rushes and feed mainly at night on frogs, fish, yabbies, spiders, insects and snails. May construct feeding platforms over deeper water from reeds trampled by the bird; platforms are often littered with prey remains.	Nil No records within the locality, no suitable habitat present.	None Species absent.

Scientific Name	BS Status	EPBC Status	Source	Habitat Association	Likelihood of Occurrence	Potential for Impact
<i>Stagonopleura guttata</i> Diamond Firetail	V		6 records within 10km (DPE 2023a)	Widely distributed in NSW, with a concentration of records from the Northern, Central and Southern Tablelands, the Northern, Central and South Western Slopes and the North West Plains and Riverina. Not commonly found in coastal districts, though there are records from near Sydney, the Hunter Valley and the Bega Valley. Scattered distribution over the rest of NSW, though is very rare west of the Darling River. Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum Woodlands. Also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities, and often found in riparian areas (rivers and creeks), and sometimes in lightly wooded farmland.	Moderate 6 Records within the locality, suitable habitat present within the study area, however no suitable habitat present within the project area.	Low Potential habitat for this species would not be removed.
<i>Calyptrorhynchus lathamii</i> South-eastern Glossy Black-Cockatoo	V	V	Species or species habitat may occur within area (DCCEW 2023a)	Uncommon although widespread throughout suitable forest and woodland habitats. Occurs from the central Queensland coast to East Gippsland in Victoria, and inland to the southern tablelands and central western plains of NSW, with a small population in the Riverina. Feeds almost exclusively on the seeds of several species of she-oak (Casuarina and Allocasuarina species).	Low No records within the locality, suitable habitat present.	Low Potential habitat for this species would not be removed and species is unlikely to occur in study area
<i>Polytelis swainsonii</i> Superb Parrot	V	V	31 records within 10km (DPE 2023a)	Found throughout eastern inland NSW. On the South-western Slopes their core breeding area is roughly bounded by Cowra and Yass in the east, and Grenfell, Cootamundra and Coolac in the west. Birds breeding in this region are mainly absent during winter, when they migrate north to the region of the upper Namoi and Gwydir Rivers. The other main breeding sites are in the Riverina along the corridors of the Murray, Edward and Murrumbidgee Rivers where birds are present all year round. Inhabit Box-Gum, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest.	High Appropriate habitat for species and multiple recorded observations of the species within the area.	Low Minimal low quality foraging habitat would be removed
<i>Apheocephala leucopsis</i> Southern Whiteface	V		Species or species habitat may occur within area (DCCEW 2023a)	Occur across most of mainland Australia south of the tropics, from the north- eastern edge of the Western Australian wheatbelt, east to the Great Dividing Range. Lives in a wide range of open woodlands and shrublands where there is an understorey of grasses or shrubs, or both. These areas are usually in habitats dominated by acacias or eucalypts on ranges, foothills and lowlands, and plains. Forages almost exclusively on the ground, favouring habitat with low tree densities and an herbaceous understorey litter cover.	Low No records within the locality, suitable habitat present.	Low Potential habitat for this species would not be removed, species unlikely to occur in study area.

Scientific Name	BS Status	EPBC Status	Source	Habitat Association	Likelihood of Occurrence	Potential for Impact
<i>Leipoa ocellata</i> Malleefowl	E	V	Species or species habitat known to occur within area (DCCEW 2023a)	Stronghold in the mallee in the south west centred on Mallee Cliffs NP and extending east to near Balranald and scattered records as far north as Mungo NP. Eastern boundary distribution follows a line from Wagga-Grenfell-Orange. Typically occurs in mallee eucalypt woodlands with a dense but discontinuous canopy and varied shrubby understorey, especially where the mallee trees are multi-stemmed. Prefers areas of light sandy to sandy loam soils. Occasionally occur in other types of dry eucalypt forests. Found in unburnt habitat, with habitat unburnt for 40–60 years preferred. Also occurs in Red Ironbark E. sideroxylon woodland at the eastern limit of their distribution.	Nil No records within the locality, no suitable habitat present.	None Species absent.
<i>Neophema chrysostoma</i> Blue-winged Parrot	V	V	Species or species habitat may occur within area (DCCEW 2023a)	During the non-breeding period, from autumn to early spring, birds are recorded in western NSW, with some reaching south-eastern NSW, particularly on the southern migration. Inhabits a range of habitats from coastal, sub-coastal and inland areas, through to semi-arid zones. Tends to favour grasslands and grassy woodlands, often found near wetlands both near the coast and in semi-arid zones. Sometimes seen in altered environments such as airfields, golf-courses and paddocks. Pairs or small parties forage mainly near or on the ground for seeds of a wide range of native and introduced grasses, herbs and shrubs.	Low No records within the locality, suitable habitat present.	Low Potential habitat for this species would not be removed, species unlikely to occur in study area.
<i>Climacteris picumnus victoricae</i> Brown Treecreeper (south-eastern)	V		Species or species habitat may occur within area (DCCEW 2023a)	The western boundary of the species range runs approximately through Corowa, Wagga Wagga, Temora, Forbes, Dubbo and Inverell. Often found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species. Also found in mallee and River Red Gum Forest bordering wetlands with an open understorey of acacias, saltbush, lignum, cumbungi and grasses. Usually not found in woodlands with a dense shrub layer. Fallen timber is an important habitat component for foraging. Also recorded, though less commonly, in similar woodland habitats on the coastal ranges and plains.	Moderate Small number of records in the area, suitable habitat present.	Low Only marginal habitat for this species would not be removed

Scientific Name	BS Status	EPBC Status	Source	Habitat Association	Likelihood of Occurrence	Potential for Impact
<i>Grantiella picta</i> Painted Honeyeater	V	V	Species or species habitat may occur within area (DCCEW 2023a)	Nomadic species occurring at low densities throughout its range. Most commonly found on the inland slopes of the Great Dividing Range in NSW, where almost all breeding occurs. More likely to be found in the north of its distribution in winter. Inhabits Boree/ Weeping Myall (<i>Acacia pendula</i>), Brigalow (<i>A. harpophylla</i>) and Box-Gum Woodlands and Box-Ironbark Forests. Specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias. Prefers mistletoes of the genus <i>Amyema</i> .	Low No records within the locality, suitable habitat present.	Low Potential habitat for this species would not be removed, species unlikely to occur in study area.
<i>Hirundapus caudacutus</i> White-throated Needletail		V	Species or species habitat likely to occur within area (DCCEW 2023a)	Migrates to eastern Australia from October to April. Almost exclusively aerial and most often seen before storms, low pressure troughs and approaching cold fronts and occasionally bushfire. Occurs over most types of habitat, but mostly recorded above wooded areas, including open forest and rainforest. May also fly between trees or in clearings, below the canopy. Recorded roosting in trees in forests and woodlands, both among dense foliage in the canopy or in hollows.	Low No records within the locality, suitable habitat present.	Low Potential habitat for this species would not be removed, species unlikely to occur in study area.
<i>Falco hypoleucos</i> Grey Falcon	V	V	Species or species habitat likely to occur within area (DCCEW 2023a)	Sparsely distributed in NSW, chiefly throughout the Murray-Darling Basin, with the occasional vagrant east of the Great Dividing Range. Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. Also occurs near wetlands where surface water attracts prey.	Low No records within the locality, suitable habitat present.	Low Potential habitat for this species would not be removed, species unlikely to occur in study area.
<i>Numenius madagascariensis</i> Eastern Curlew		CE	Species or species habitat likely to occur within area (DCCEW 2023a)	Occurs across the entire coast but is mainly found in estuaries such as the Hunter River, Port Stephens, Clarence River, Richmond River and COLLS of the south coast. Generally occupies coastal lakes, inlets, bays and estuarine habitats, and is mainly found in intertidal mudflats and sometimes saltmarsh of sheltered coasts in NSW. Rarely seen inland.	Nil No records within the locality, no suitable habitat present.	None Species absent.
<i>Gallinago hardwickii</i> Latham's Snipe, Japanese Snipe		CE	Species or species habitat may occur within area (DCCEW 2023a)	Non-breeding migrant to the south east of Australia. Breeds in Japan and on the east Asian mainland. Seen in small groups or singly in freshwater wetlands on or near the coast, generally among dense cover. Found in any vegetation around wetlands, in sedges, grasses, lignum, reeds and rushes and also in saltmarsh and creek edges on migration. Also uses crops and pasture.	Nil No records within the locality, no suitable habitat present.	None Species absent.

Scientific Name	BS Status	EPBC Status	Source	Habitat Association	Likelihood of Occurrence	Potential for Impact
<i>Apus pacificus</i> Fork-tailed Swift		CE	Species or species habitat may occur within area (DCCEW 2023a)	Almost exclusively aerial, flying from less than 1 m to at least 300 m above ground and probably much higher. Many records occur east of the Great Divide, however, a few populations have been found west of the Great Divide. Mostly occur over inland plains but sometimes above foothills or in coastal areas. Mostly found over dry or open habitats, including riparian woodland and tea-tree swamps, low scrub, heathland or saltmarsh. Also found at treeless grassland and sandplains covered with spinifex, open farmland and inland and coastal sand-dunes. Sometimes occur above rainforests, wet sclerophyll forest or open forest or plantations of pines. Also found over settled areas, including towns, urban areas and cities.	Low No records within the locality, suitable habitat present.	Low Potential habitat for this species would not be removed, species unlikely to occur in study area.
<i>Myiagra cyanoleuca</i> Satin Flycatcher		CE	Species or species habitat may occur within area (DCCEW 2023a)	Found along the east coast of Australia from far northern Queensland to Tasmania. Uncommonly seen species, especially in the far south of its range, where it is a summer breeding migrant. Inhabits heavily vegetated gullies in eucalypt-dominated forests and taller woodlands, and on migration, occur in coastal forests, woodlands, mangroves and drier woodlands and open forests.	Low No records within the locality, suitable habitat present.	Low Species unlikely to occur in study area.
<i>Calidris melanotos</i> Pectoral Sandpiper	V		Species or species habitat may occur within area (DCCEW 2023a)	Widespread but scattered records across NSW, east of the divide and in the Riverina and Lower Western regions. Prefers shallow fresh to saline wetlands and is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands. Usually in coastal or near-coastal habitats, and prefers wetlands with open mudflats and low emergent or fringing vegetation such as grass or samphire.	Low No records within the locality, suitable habitat present.	Low Low likelihood of occurrence.
<i>Actitis hypoleucos</i> Common Sandpiper		CE	Species or species habitat may occur within area (DCCEW 2023a)	Found in Australia during non-breeding season, on all coastlines and in inland areas, but is concentrated in the north and west with important areas in WA, the NT and QLD. Utilises a wide range of coastal and inland wetlands with varying salinity levels.	Nil No records within the locality, no suitable habitat present.	None Species absent.

Scientific Name	BS Status	EPBC Status	Source	Habitat Association	Likelihood of Occurrence	Potential for Impact
<i>Motacilla flava</i> Yellow Wagtail	CE	CE	Species or species habitat may occur within area (DCCEW 2023a)	Occurs within Australia in open country habitat with disturbed ground and some water. Recorded in short grass and bare ground, swamp margins, sewage ponds, saltmarshes, playing fields, airfields, ploughed land and town lawns. Breeds in temperate Europe and Asia.	Low No records within the locality, suitable habitat present.	Low Removal of marginally suitable foraging habitat, species unlikely to occur in study area.
<i>Calidris acuminata</i> Sharp-tailed Sandpiper		CE	Species or species habitat may occur within area (DCCEW 2023a)	Most of the population migrates to Australia during non-breeding season, mostly to the south-east and are widespread in both inland and coastal locations and in both freshwater and saline habitats. Many inland records are of birds on passage. Prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation.	Low No records within the locality, suitable habitat present.	Low Removal of marginally suitable foraging habitat, however species unlikely to occur in study area.
<i>Artamus cyanopterus</i> Dusky Woodswallow	V	-	3 records within 10 km (DPE 2023a)	Occurs throughout most of NSW, but is sparsely scattered in, or largely absent from, much of the upper western region. Most breeding activity occurs on the western slopes of the Great Dividing Range. Primarily inhabit dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and ground-cover of grasses or sedges and fallen woody debris. It has also been recorded in shrublands, heathlands and very occasionally in moist forest or rainforest. Also found in farmland, usually at the edges of forest or woodland.	Moderate Records within the locality, suitable habitat present within the study area, however only marginal foraging habitat present within the project area.	Low Removal of marginally suitable foraging habitat.
<i>Petroica phoenicea</i> Flame Robin	V		1 record within 10 km (DPE 2023a)	Breeds in upland areas in NSW and moves to the inland slopes and plains in winter. Likely two separate populations in NSW, one in the Northern Tablelands, and another ranging from the Central to Southern Tablelands. Breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes. Prefers clearings or areas with open understoreys.	Moderate Records within the locality, suitable habitat present within the study area, however only marginal foraging habitat present within the project area.	Low Removal of marginally suitable foraging habitat.

Scientific Name	BS Status	EPBC Status	Source	Habitat Association	Likelihood of Occurrence	Potential for Impact
<i>Pomatostomus temporalis temporalis</i> Grey-crowned Babbler (eastern subspecies)	V		23 records within 10 km (DPE 2023a)	Occurs on the western slopes of the Great Dividing Range, and on the western plains reaching as far as Louth and Bairanald. Also occurs in woodlands in the Hunter Valley and in several locations on the north coast of NSW. Inhabits open Box-Gum Woodlands on the slopes, Box-Cypress-pine and open Box Woodlands on alluvial plains and woodlands on fertile soils in coastal regions.	Moderate Records within the locality, suitable habitat present within the study area, however only marginal foraging habitat present within the project area.	Low Removal of marginally suitable foraging habitat.
<i>Chthonicola sagittate</i> Speckled Warbler	V	-	1 record within 20 km (DPE 2023a)	Patchy distribution throughout south-eastern Queensland, the eastern half of NSW and into Victoria, as far west as the Grampians. Most frequently reported from the hills and tablelands of the Great Dividing Range, and rarely from the coast. Lives in a wide range of Eucalyptus dominated communities that have a grassy understorey, often on rocky ridges or in gullies. Typical habitat would include scattered native tussock grasses, a sparse shrub layer, some eucalypt regrowth and an open canopy. Large, relatively undisturbed remnants are required for the species to persist in an area.	Moderate Records within the locality, suitable habitat present within the study area, however no suitable habitat present within the project area.	Low Potential habitat for this species would not be removed.
<i>Epthianura albifrons</i> White-fronted Chat	V		1 record within 10km (DPE 2023a)	Found mostly in temperate to arid climates and very rarely sub-tropical areas. Occurs mostly in the southern half of NSW, in damp open habitats along the coast, and near waterways in the western part of the state. Along the coastline, it is found predominantly in saltmarsh vegetation but also in open grasslands and sometimes in low shrubs bordering wetland areas. Typically usually found foraging on bare or grassy ground in wetland areas, singly or in pairs.	Moderate Records within the locality, suitable habitat present within the study area, however no suitable habitat present within the project area.	Low Potential habitat for this species would not be removed.

Scientific Name	BS Status	EPBC Status	Source	Habitat Association	Likelihood of Occurrence	Potential for Impact
Fish						
<i>Maccullochella peelii</i> Murray Cod		V	Species or species habitat may occur within area (DCCEW 2023a)	Endemic to river systems of the Murray–Darling Basin in south-eastern Australia. Once widespread throughout the Murray-Darling system, it is now uncommon in much of its range and restricted to the lower Murray-Darling. Found in a variety of habitats ranging from clear, rocky streams to slow flowing turbid rivers, lakes and billabongs and are more common in waterways with large rocks, snags and undercut banks with overhanging vegetation.	Low No records within the locality, marginal habitat present.	Low Removal of marginally suitable habitat, species unlikely to occur in study area and fish passage would not be impeded during construction and operation.
<i>Maccullochella macquariensis</i> Trout Cod	E	E	Species or species habitat may occur within area (DCCEW 2023a)	Endemic to the Murray-Darling Basin. Once widespread in the southern tributaries, the species has declined dramatically in both abundance and distribution and are now known only from scattered localities. The last remaining natural populations in the wild are in the Murray River between Yarrawonga, Barmah and Seven Creeks. Occurs in a range of habitats, but is strongly associated with the presence of woody debris and snags.	Low No records within the locality, marginal habitat present.	Low Removal of marginally suitable habitat, species unlikely to occur in study area and fish passage would not be impeded during construction and operation.
<i>Macquaria australasica</i> Macquarie Perch	E	E	Species or species habitat may occur within area (DCCEW 2023a)	Known only from scattered localities in the cool upper reaches of the Murray-Darling system of NSW, including the Hawkesbury-Nepean and Shoalhaven catchments, Victoria and ACT. Also found in man-made lakes on the NSW coast and in lakes and reservoirs, where adults aggregate in small shoals during the spawning season. Inhabits cool, clear freshwaters of rivers with deep holes and shallow riffles.	Low No records within the locality, marginal habitat present.	Low Removal of marginally suitable habitat, species unlikely to occur in study area and fish passage would not be impeded during construction and operation.

Scientific Name	BS Status	EPBC Status	Source	Habitat Association	Likelihood of Occurrence	Potential for Impact
Mammals						
<i>Phascolarctos</i> Koala	V	V	Species or species habitat known to occur within area (DCCEW 2023a)	Found on the central and north coasts, southern highlands, southern and northern tablelands, Blue Mountains, southern coastal forests of NSW, with some smaller populations on the plains west of the Great Dividing Range. Inhabits eucalypt woodlands and forests, and feeds on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but will select preferred browse species in any one area.	Low No records within the locality, suitable habitat present within the study area. However no suitable habitat present within the project area.	Low Potential habitat for this species would not be removed and species unlikely to occur in study area.
<i>Dasyurus maculatus maculatus</i> Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll	V	E	Species or species habitat may occur within area (DCCEW 2023a))	Found in eastern NSW, the species has been recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Uses hollow-bearing trees, fallen logs, small caves, rock outcrops and rocky-cliff faces as den sites. Females occupy home ranges of 200-500 hectares, while males occupy very large home ranges from 500 to over 4000 hectares. Known to traverse their home ranges along densely vegetated creek lines.	Low No records within the locality, suitable habitat present within the study area. However no suitable habitat present within the project area.	Low Removal of a small amount of broadly suitable/ low quality habitat, however species unlikely to occur in study area.
<i>Chalinolobus dwyeri</i> Large-eared Pied Bat, Large Pied Bat	V	V	Species or species habitat may occur within area (DCCEW 2023a))	Found mainly in areas with extensive cliffs and caves, from Rockhampton to Bungonia in the NSW Southern Highlands. Generally rare with a very patchy distribution in NSW and scattered records from the New England Tablelands and North West Slopes. Roosts in caves, crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (Petrochelidon ariel), frequenting low to mid-elevation dry open forest and woodland close to these features. Found in well-timbered areas containing gullies.	Low No records within the locality, suitable habitat present.	Low Potential habitat for this species would not be removed and species unlikely to occur in study area.
<i>Pteropus poliocephalus</i> Grey-headed Flying-fox	V	V	Species or species habitat may occur within area (DCCEW 2023a))	Generally found within 200 km of the eastern coast of Australia, from Rockhampton to Adelaide. May be found in unusual locations in times of natural resource shortage. Occurs in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy.	Low No records within the locality, suitable habitat present.	Low Potential habitat for this species would not be removed and species unlikely to occur in study area.

Scientific Name	BS Status	EPBC Status	Source	Habitat Association	Likelihood of Occurrence	Potential for Impact
<i>Nyctophilus corbeni</i> Corben's Long-eared Bat, South-eastern Long-eared Bat	V	V	Species or species habitat may occur within area (DCCEW 2023a))	Found throughout the Murray-Darling Basin and the Pilliga Scrub region. Inhabits a variety of vegetation types, including mallee, bullocke Allocasuarina leuhmannii and box eucalypt dominated communities, but it is distinctly more common in box/ironbark/cypress-pine vegetation that occurs in a north-south belt along the western slopes and plains of NSW and southern Queensland. Roosts in tree hollows, crevices, and under loose bark.	Low No records within the locality, suitable habitat present.	Low Potential habitat for this species would not be removed and species unlikely to occur in study area.
Reptiles						
<i>Aprasia parapulchella</i> Pink-tailed Legless Lizard	V	V	Species or species habitat may occur within area (DCCEW 2023a))	Only known from the Central and Southern Tablelands, and the South Western Slopes. There is a concentration of populations in the Canberra/Queanbeyan Region. Other populations have been recorded near Cooma, Yass, Bathurst, Albury and West Wyalong. This species is also found in the Australian Capital Territory. Inhabit sloping, open woodland areas with predominantly native grassy groundlayers, particularly those dominated by Kangaroo Grass (<i>Themeda australis</i>). Sites are typically well-drained, with rocky outcrops or scattered, partially buried rocks. Commonly found beneath small, partially embedded rocks and appear to spend considerable time in burrows below these rocks; the burrows have been constructed by and are often still inhabited by small black ants and termites.	Low No records within the locality, suitable habitat present.	Low Potential habitat for this species would not be removed and species unlikely to occur in study area.
Flora						
<i>Prasophyllum sp. Wybong</i> <i>a leek-orchid</i>	E	E	Species or species habitat may occur within area (DCCEW 2023a))	Endemic to NSW and known from near Ilford, Premier, Muswellbrook, Wybong, Yeoval, Inverell, Tenterfield, Currabubula and the Pilliga area. Known to occur in open eucalypt woodland and grassland.	Nil No records within the locality, no suitable habitat present.	None Species absent.
<i>Swainsona recta</i> Small Purple-pea, Mountain Swainson-pea, Small Purple Pea	E	E	Species or species habitat may occur within area (DCCEW 2023a))	Current populations exist in the Queanbeyan and Wellington-Mudgee areas, previous populations thought extinct include Carcoar, Culcairn and Wagga Wagga. Inhabits grassy woodlands and open-forests dominated by Blackely's Red Gum, Yellow Bloodwood, Candlebark and Long-leaved Box and in association with understorey dominants that include Themeda australis, Poa spp. and Austrostipa spp. Flowers throughout spring, with a peak in October.	Nil No records within the locality, no suitable habitat present in proposal area	None Species absent.

Scientific Name	BS Status	EPBC Status	Source	Habitat Association	Likelihood of Occurrence	Potential for Impact
<i>Austrostipa wakoolica</i>	E	E	Species or species habitat may occur within area (DCCEW 2023a)	Confined to floodplains of the Murray River tributaries of central and south western NSW, in open woodland on grey, silty clay or sandy loam soils. Habitats include the edges of a lignum swamp with box and mallee; creek banks in grey, silty clay; mallee and lignum sandy-loam flat; open Cypress Pine forest on low sandy range; and a low, rocky rise. Associated species include White Cypress Pine, Grey Box, Bimble Box, <i>Austrostipa eremophila</i> , <i>A. drummondii</i> , <i>Austrodanthonia eriantha</i> and Climbing Saltbush. Flowers from October to December.	Low No records within the locality, suitable habitat present.	Low Low likelihood of occurrence.
<i>Prasophyllum petilum</i> Tarengo Leek Orchid	E	E	Species or species habitat may occur within area (DCCEW 2023a)	Known from five sites near Boorowa, Queanbeyan area, Ilford, Delegate and west of Muswellbrook. Grows in open sites within Natural Temperate Grassland at the Boorowa and Delegate sites. Grows in grassy woodland in association with River Tussock, Black Gum and tea-trees near Queanbeyan and within grassy groundlayer dominated by Kangaroo Grass under Box-Gum Woodland at Ilford. Flowers in October at Boorowa and Ilford, and December at sites near Queanbeyan and Delegate.	Nil No records within the locality, no suitable habitat present.	None Species absent.
<i>Vincetoxicum forsteri</i>	E	E	Species or species habitat may occur within area (DCCEW 2023a)	Occurs from southern QLD into central NSW, as far south near Temora with the majority of records occurring in the central western region. Records from Goonoo, Pilliga West, Pilliga East, Bibblewindi, Cumbil and Eura State Forests, Coolbaggie NR, Goobang NP and Beni SCA. Also has been recorded Hiawatha State Forest near West Wyalong in the south and there are old records as far north as Crow Mountain near Barraba and near Glenmorgan in the western Darling Downs. Grows in dry scrub and open forest. Recorded from low-altitude sedimentary flats in dry woodlands of <i>Eucalyptus fibrosa</i> , <i>Eucalyptus siceroxylon</i> , <i>Eucalyptus albens</i> , <i>Callitris endlicheri</i> , <i>Callitris glaucophylla</i> and <i>Allocasuarina luehmannii</i> . Also grows in association with <i>Acacia hakeoides</i> , <i>Acacia lineata</i> , <i>Melaleuca uncinata</i> , <i>Myoporum</i> species and <i>Casuarina</i> species. Flowers in spring, with flowers recorded in November or May and is suspected to be related to rainfall, with fruiting probably 2 to 3 months later. Altitudes are generally in the range of 300 - 400 m a.s.l.	Low No records within the locality, suitable habitat present.	Low Low likelihood of occurrence.

Scientific Name	BS Status	EPBC Status	Source	Habitat Association	Likelihood of Occurrence	Potential for Impact
<i>Lepidium aschersonii</i> Spiny Peppergrass	V	V	Species or species habitat may occur within area (DCCEW 2023a)	Occurring in the marginal central-western slopes and north-western plains regions of NSW. Found on ridges of gilgai clays dominated by <i>Acacia harpophyll</i> , <i>Casuarina cristata</i> , <i>Allocasuarina luehmannii</i> and <i>Eucalyptus microcarpa</i> , with the understorey often dominated by introduced plants. Grows as a component of the ground flora, in grey loamy clays. Vegetation structure varies from open to dense, with sparse grassy understorey with introduced plants and occasional heavy litter.	Nil No records within the locality, no suitable habitat present within the project area.	None Species absent.
<i>Swainsona murrayana</i> Slender Darling-pea, Slender Swainson, Murray Swainson-pea	V	V	Species or species habitat may occur within area (DCCEW 2023a)	Found throughout NSW, recorded in the Jerilderie and Deniliquin areas of the southern riverine plain, the Hay plain as far north as Willandra National Park, near Broken Hill and in various localities between Dubbo and Moree. Grows in a variety of soil and vegetation types including bladder saltbush, black box and grassland communities on level plains, floodplains and depressions and is often found with <i>Maireana</i> species. Also found in remnant native grasslands or grassy woodlands that have been intermittently grazed or cultivated.	Low No records within the locality, suitable habitat present.	Low Low likelihood of occurrence.
<i>Thesium australe</i> Toadflax	V	V	Species or species habitat may occur within area (DCCEW 2023a)	Found in very small populations scattered across eastern NSW, along the coast, and from the Northern to Southern Tablelands. Occurs in grassland or grassy woodland, and is often found in association with Kangaroo Grass.	Low No records within the locality, suitable habitat present.	Low Low likelihood of occurrence.

Appendix E

Flora species list

Table E.1 Flora species list

Family	Exotic	Scientific Name	Common Name
Trees			
Myrtaceae		<i>Eucalyptus albens</i>	White Box
Myrtaceae		<i>Eucalyptus camaldulensis</i>	River Red Gum
Myrtaceae		<i>Callitris columellaris</i>	White Cypress Pine
Shrubs			
Fabaceae (Mimosoideae)		<i>Acacia dealbata</i>	Silver Wattle
Asteraceae		<i>Cassinia aculeata</i>	Dolly Bush
Rosaceae	*W, P	<i>Rubus fruticosus</i> sp. agg.	Blackberry
Ferns			
Pteridaceae		<i>Cheilanthes austrotenuifolia</i>	Rock Fern
Forbs			
Oxalidaceae		<i>Oxalis perennans</i>	
Asteraceae	*	<i>Lactuca serriola</i>	Prickly Lettuce
Asteraceae	*	<i>Arctotheca calendula</i>	Capeweed
Verbenaceae	*	<i>Verbena bonariensis</i>	Purpletop
Fabaceae (Faboideae)	*	<i>Trifolium arvense</i>	Haresfoot Clover
Campanulaceae		<i>Wahlenbergia</i> spp.	Bluebell
Malvaceae	*	<i>Sida</i> spp.	
Lamiaceae	*	<i>Salvia verbenaca</i>	Vervain
Brassicaceae	*	<i>Lepidium africanum</i>	Common Peppergrass
Iridaceae	*	<i>Romulea rosea</i>	Onion Grass
Urticaceae	*	<i>Urtica urens</i>	Small Nettle
Boraginaceae	*P	<i>Echium plantagineum</i>	Patterson's Curse
Polygonaceae	*	<i>Rumex crispus</i>	Curled Dock
Plantaginaceae	*	<i>Plantago lanceolata</i>	Lamb's Tongues
Asteraceae	*P	<i>Cirsium vulgare</i>	Spear Thistle
Asteraceae	*	<i>Sonchus</i> sp.	Sowthistle
Fabaceae (Faboideae)	*	<i>Trifolium</i> sp.	A Clover
Asteraceae	*	<i>Silybum marianum</i>	Variegated Thistle
Asteraceae	*W, P	<i>Xanthium occidentale</i>	Noogoora Burr
Lamiaceae	*P	<i>Marrubium vulgare</i>	White Horehound
Asteraceae	*	<i>Bidens pilosa</i>	Cobbler's Pegs
Chenopodiaceae		<i>Atriplex semibaccata</i>	Creeping Saltbush
Asteraceae		<i>Calotis cuneifolia</i>	Purple Burr Daisy
Asteraceae		<i>Brachycome</i> sp.	
Amaranthaceae		<i>Alternanthera denticulata</i>	Lesser Joyweed
Myrsinaceae	*	<i>Lysimachia arvensis</i>	Scarlet Pimpernel
Papaveraceae	*P	<i>Argemone ochroleuca</i> subsp. <i>ochroleuca</i>	Mexican Poppy

Family	Exotic	Scientific Name	Common Name
Grasses			
Poaceae	*	<i>Lolium perenne</i>	Perennial Ryegrass
Poaceae	*	<i>Phalaris aquatica</i>	Phalaris
Poaceae	*	<i>Paspalum dilatatum</i>	Paspalum
Poaceae		<i>Cynodon dactylon</i>	Common Couch
Rubiaceae	*	<i>Galium aparine</i>	Goosegrass
Poaceae	*	<i>Avena fatua</i>	Wild Oats
Poaceae		<i>Rytidosperma sp.</i>	
Poaceae		<i>Rytidosperma sp.</i>	
Poaceae		<i>Chloris truncata</i>	Windmill Grass
Poaceae		<i>Enteropogon acicularis</i>	Curly Windmill Grass
Poaceae		<i>Paspalidium jubiflorum</i>	Warrego Grass
Poaceae	*	<i>Hordeum vulgare</i>	Barley Grass
Poaceae	*	<i>Bromus diandrus</i>	Great Brome
Poaceae	*	<i>Bromus hordeaceus</i>	Soft Brome
Poaceae	*	<i>Bromus catharticus</i>	Prairie Grass
Chenopodiaceae		<i>Maireana spp.</i>	Cotton Bush, Bluebush, Fissure-weed
Chenopodiaceae	P	<i>Sclerolaena birchii</i>	Galvanized Burr
Graminoids			
Cyperaceae		<i>Carex appressa</i>	Tall Sedge
Juncaceae	*	<i>Juncus acutus</i>	Sharp Rush

Key:

* - Exotic species

w - Weed of national significance

P – Priority weed identified on NSW WeedWise (2023)

Appendix F

Fauna habitat elements

Table P.1 Fauna habitat elements

Habitat element	Present in Proposal area	Present in Study area	Comment
Winter nectar source	No	No	
Mature fleshy fruit –bearing tree species	No	No	
Small (<2 cm) tree hollows and fissures	No	Yes	Multiple HBT's with small hollows in study area, none occur within the proposal area.
Medium (2-10 cm) tree hollows	No	Yes	Five medium hollows in in study area, none occur within the proposal area.
Large (>10 cm) tree hollows	No	Yes	Four large hollow in study area, none occur within the proposal area.
Perennial water sources	Yes	Yes	Nyrang Creek runs through the proposal area.
Creek bed	Yes	Yes	Small creek bed in proposal area (Nyrang Creek).
Creek banks	Yes	Yes	Nyrang Creek runs through the proposal area.
Flow	Yes	Yes	Slow flowing creek which fluctuates depending on the amount of recent rainfall.
Wildlife corridor potential	Yes	Yes	Adjoining vegetation is part of a larger contiguous landscape comprised of PCT 9 and PCT 267, which follows Nyrang Creek.
Preferred Koala browse species	Yes	Yes	<p>White Box (<i>E. albens</i>) are secondary food tree species for Koalas (NSW Department of Planning and Environment, 2022).</p> <p>River Red Gum (<i>E. camaldulensis</i>) is primary food tree species for the central and southern tablelands koala modelling region (NSW Department of Planning and Environment, 2022).</p> <p>The two trees within the project area that will be removed are not suitable for use by Koalas as they are too small/juvenile.</p>
Fruiting <i>Allocasuarina</i> trees	No	No	
Large trees, old trees, large woody debris	No	Yes	Mature White Box (<i>E. albens</i>), Mature River Red Gum (<i>E. camaldulensis</i>)
Nests and roosts	No	No	
Latrine or den sites for spotted-tailed quolls;	No	No	
Other potential bat roosts culverts, bridges, fairy martin nests, staghorns	No	No	The existing bridge is comprised of concrete structures. At the time of the site survey, there was no evidence of the bridge being used by microbats.
Deep litter cover	No	No	

Habitat element	Present in Proposal area	Present in Study area	Comment
Additional site notes	The proposal area comprises of an existing bridge, culvert causeway and associated road areas. There is a history of disturbance associated with the proposal area through the construction of the current bridge and temporary river crossing, which is in use. Any fauna species present would be capable of persisting in areas prone to disturbance and are likely to be highly mobile and capable of dispersing during the construction phase of the project.		
Constraints identified	-		

Appendix G

Assessments of Significance

The likely significance of impacts on threatened species, populations and ecological communities, or their habitat known or considered likely to occur and be affected by the proposal has been assessed pursuant to Section 7.3 of the BC Act.

An assessment of the likely significance of impacts has been prepared for the following biota listed under the BC Act:

White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions The section below analyses and discusses the above ecological community in accordance with the test of significance.

White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions (Box Gum Woodland) Box Gum Woodland is listed as a Critically endangered ecological community (CEEC) under the BC Act. This CEEC was identified during field surveys and is associated with PCT 267 which is present within the study area of Nyrang Creek.

The proposal would involve the removal of 0.29 ha of potential habitat for this CEEC.

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

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

Not applicable.

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

1.2.1. 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

The CEEC is known to be threatened by the following relevant activities (DSEWPC, 2012):

- Inappropriate grazing regimes
- Incremental clearance of vegetation for various purposes (e.g., cropping, infrastructure works and maintenance)
- Fragmentation into small remnants
- Loss or decline of mature trees due to dieback or other causes erosion and/or sedimentation
- Lack of natural regeneration for understorey and canopy species
- Invasion by exotic plants
- Addition of fertilisers to improve sites
- Firewood collection
- Salinity

Roadworks are a known threat to this community and weed encroachment was already identified as extensive in the proposal study area. Increased levels of sedimentation or contamination from runoff related to earthworks activities may threaten potential habitat for this CEEC downhill of the proposal area.

The proposal would result in the removal of up to 0.29 ha of broadly suitable, low quality (given previous encroachment of weeds) habitat for this CEEC, no trees which form part of this CEEC would be removed or impacted by the works. The proposal is unlikely to result in an adverse effect on the community such that a viable local occurrence of this CEEC is placed at risk of extinction.

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

The composition of this ecological community is currently identified as a grassy woodland with tree a canopy cover of: *E. Albens* and *Callitris glaucophylla*.

The project would see the removal of a small amount of exotic grass cover in a PCT associated with this CEEC, no canopy or mature *E. albens* would be impacted. It is therefore unlikely that the proposal would adversely modify the composition of the community.

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

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

The proposal would result in the removal and disturbance of up to 0.29 ha of broadly suitable, low quality (given previous road work activities and disturbance caused by encroachment of weeds) habitat for this community.

Given the proposal area has been historically exposed to impacts associated with the above-mentioned threats, as well as through historical modification associated with the construction of the existing road, bridge and causeway, any habitat present is of low quality. However, earthwork activities and associated runoff may potentially adversely impact suitable habitat for this community downhill from the proposal.

Taking these points into consideration, the proposal is unlikely to result in a substantial modification to any potential habitat for this community within the proposal area. Ensuring standard construction protocols for earthworks are implemented is likely to reduce the risk of the proposal resulting in substantial modification in adjacent potentially suitable habitat.

1.3.2. 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 proposal site occurs in a fragment landscape along Nangar Rd, within an area that has been previously cleared of native vegetation and disturbed to facilitate construction of the existing bridge and causeway. As outlined above any habitat that will be impacted will be of low quality, given the ongoing impacts associated with partial vegetation clearing, historical disturbance, influence of road users and weed encroachment.

The clearing of vegetation within the proposal site will not result in further fragmentation or isolation of any known or potential habitat for this CEEC and would be unlikely to result in the reduction in the total available amount of broadly suitable habitat for this CEEC from within the locality. The proposal would also not result in the establishment of any permanent or long-term barriers to spread or expansion for this community.

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

As outlined above no area will be removed, fragmented or isolated to impact the long-term survival of species or CEEC.

Minor modifications to fringe habitat will be temporary during construction and impact areas of poor-quality habitat. low quality potential habitat is unlikely to be important for the persistence of the community in the locality. The proposal is unlikely to result in any modification to known habitat for this community and is unlikely to impact on any aspect of the life cycle of known populations of its associated species.

Taking these points into consideration, the proposal is unlikely to result in impacts to potential habitat that is important to the long-term survival of this community in the locality.

1.4. 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),

The proposal will not have an impact on any area of outstanding biodiversity value.

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

The proposal would result in a minor increase to the following KTPs:

- Clearing of native vegetation

- Up to 0.29 ha of disturbed vegetation that represents broadly suitable, low quality potential habitat for this community would be removed

1.6. Whether the proposal has the potential to introduce or increase the operation of the following KTPs of relevance to this species through soil disturbance and increased visitation to the area:

Invasion of plant communities by perennial exotic grasses

- The proposal has the potential to introduce new species of weeds that may not already be present, some of which are particularly prone to invading disturbed roadside edges, and which are not already present within the investigation area. Mitigation measures to minimise indirect impacts, including the introduction or further spread of weeds and pathogens, would be included in the CEMP (see Section 5).

Conclusion of Assessment of Significance

Based on consideration of the above criteria, the proposal is unlikely to have a significant effect on the local occurrence of White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions pursuant to Section 7.3 of the BC Act, given:

- The proposal would not result in any impacts to known occurrences of species associated with this community and is unlikely to result in an adverse effect on the life cycle of associated species such that a viable local population is placed at risk of extinction.
- The proposal would only result in the removal of a small area (0.29 ha) of low-quality habitat for this community, with no known individuals, populations or known habitat for this species impacted by the proposal.
- The proposal will not result in fragmentation or isolation of any known or potential habitat for this community.
- The vegetation to be removed represents low quality potential habitat at best and is unlikely to be important to the long-term persistence of the community in the locality.

Consequently, a species impact statement would not be required for the CEEC White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions.

Appendix H

Fauna Species List

Table H.1 **Fauna observed or heard in Nyrang Creek study site**

Common Name	Scientific Name	Observation
Australian Raven	<i>Corvus coronoides</i>	O
Noisy Miner	<i>Manorina melanocephala</i>	O
Blue-winged Teal Duck	<i>Spatula discors</i>	O
Eastern Rosella	<i>Platycercus eximius</i>	O
Eastern Sign-bearing Froglet	<i>Crinia parinsignifera</i>	H
Welcome Swallow	<i>Hirundo neoxena</i>	O
Sulphur-crested cockatoo	<i>Cacatua galerita</i>	O
Willie Wagtail	<i>Rhipidura leucophrys</i>	O
Spotted Marsh Frog	<i>Limnodynastes tasmaniensis</i>	H
Magpie-lark	<i>Grallina cyanoleuca</i>	O

Key:

O - Observed

H - Heard

Appendix I

AHIMS search results



AHIMS Web Services (AWS) Search Result

Your Ref/PO Number : Nyrang Creek

Client Service ID : 821866

Hannah Marsh

Date: 21 September 2023

270 Summer Street

Orange New South Wales 2800

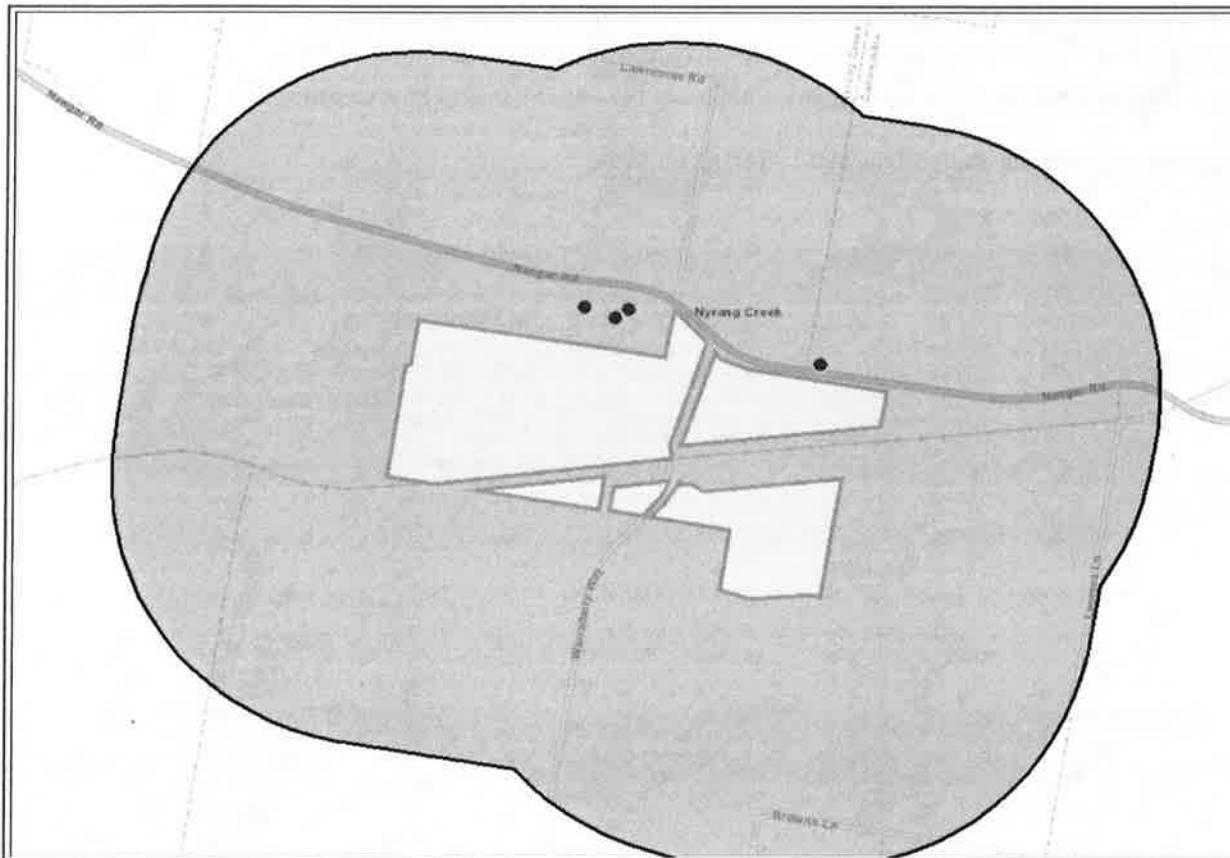
Attention: Hannah Marsh

Email: hannah.marsh@ghd.com

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 496, DP:DP715395, Section : - with a Buffer of 1000 meters, conducted by Hannah Marsh on 21 September 2023.

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



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

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

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

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

Important information about your AHIMS search

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



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