Transport for NSW

# Macksville Bridge Rehabilitation

## Review of Environmental Factors

May 2024

NSW GOVERNMENT

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# Acknowledgement of Country

Transport for NSW acknowledges the traditional custodians of the land on which the Macksville Bridge Rehabilitation is proposed.

We pay our respects to Elders past and present and celebrate the diversity of Aboriginal people and their ongoing cultures and connections to the lands and waters of NSW.

Many of the transport routes we use today – from rail lines, to roads, to water crossings – follow the traditional Songlines, trade routes and ceremonial paths in Country that our nation's First Peoples followed for tens of thousands of years.

Transport for NSW is committed to honouring Aboriginal peoples' cultural and spiritual connections to the land, waters and seas and their rich contribution to society.

# Approval and authorisation

| | |
|---|---|
| Title | Macksville Bridge Rehabilitation Review of Environmental Factors |
| Accepted on behalf of Transport for NSW by: | Jonathan Tasker – Director Project Services |
| Signed |  |
| Date: | 30/05/2024 |

# Document review tracking

| Draft No. | Date | Comments |
|---|---|---|
| Draft 1 | 22/09/2023 | First draft |
| Draft 2 | 06/10/2023 | Second draft |
| Draft 3 | 04/04/2024 | Third draft |
| Final | 14/05/2024 | Final |

# Executive summary

## The proposal

Transport for NSW (Transport) proposes to undertake rehabilitation works on the Macksville Bridge (B1873) (the proposal) over the Nambucca River on Giinagay Way, Macksville in New South Wales (NSW).

Key features of the proposal include:

- Establishment of ancillary facilities and progressive implementation of environmental controls.
- Installation of a temporary construction jetty and scaffold in different stages as required to complete the works.
- Use of barges and boats within the waterway as required to complete the works.
- Installation of traffic control in different arrangements as required to complete the works.
- Deck repairs and waterproofing to prevent rainwater ingress below the deck and rectify extensive cracking.
- Removal and replacement of failed bridge joints.
- Installation of a durability treatment or seal membrane to the entire concrete bridge deck.
- Encasing of Piers 4, 5 and 6 with concrete to restore structural capacity to these piers (both above and below the water).
- Installation of a sacrificial anode cathodic protection system (SACP) to all eight piers to protect the steel reinforcement.
- Concrete patching on all piers to rectify damage or areas of concrete spalling.
- Removal of the temporary support beam in Span 1/Pier 1 and installation of permanent support solution. This same solution will be installed on Span 9/Pier 8.
- Steel repairs to all bridge spans to rehabilitate any section loss, cracking or in any area where strengthening is required. This includes welding, drilling, bolting on new plates and full member replacement where required. Corroded rivets and bolts will be replaced with structural bolts as required.
- Servicing and maintenance of bridge bearings, including corrosion treatment. If a bearing cannot be repaired it will be replaced.
- Installation of scaffold with encapsulation in stages to capture existing paint by extraction system when blasting.
- Blasting and repainting all nine spans including the walkway.
- Installation of new pedestrian handrail along the bridge with an updated design.
- Installation of new guardrail and safety barrier along the bridge and approaches.
- General cleaning of the bridge including the deck, bird droppings and scuppers.
- Installation of bird spikes at nesting locations.
- Maintenance of scour protection at abutments.
- Walkway maintenance.
- Demobilisation of all construction equipment and reinstatement of work areas to original condition.

A site compound would be established on the northern side of the bridge with installation of scaffold as required for access. A temporary jetty, barges, and boats would also be required to facilitate the works.

The proposal is planned to be delivered in four stages and expected to take about 3.5 years to complete. Stage 1 involves pier strengthening and concrete durability works, Stage 2 involves steel rehabilitation, Stage 3 involves bridge painting and Stage 4 involves deck repairs. This staging may change or be subject to some

works being undertaken concurrently to allow for works to be finished as soon as possible. Stage 1 is expected to commence in late-2024.

## Need for the proposal

Macksville Bridge (B1873) was built in 1931 and is located on Giinagay Way over the Nambucca River. The total length of the bridge is 218.3 metres consisting of nine spans comprised of two steel beam (10.66 metre) approach spans, five steel plate through (PGIRD) girder (21.94 metres) spans, and two steel truss (43.28 metre) spans.

Before 2017 Macksville Bridge was located on the Pacific Highway. This bridge was a crucial link between Sydney and Brisbane carrying very high traffic volumes with a large percentage of heavy vehicles. Routine maintenance on the bridge was often difficult due to the challenges involved with closing or load limiting the bridge to enable works to take place. During this time, routine monitoring noted the deterioration of some of the bridge's structural elements, including deterioration of the painting system, corrosion of steel elements and chloride ingress to the concrete piers.

A routine inspection in July 2021 resulted in immediate repairs being required. These were undertaken at night under a full bridge closure over a period of two weeks. The bridge was load limited during the daytime. Further work is now required to maintain the structural integrity of the bridge and ensure safety for road users.

## Proposal objectives

The objectives of the proposal include:

- Ensure the safety of road users, members of the public and the project team/workforce
- Maintain the structural integrity of Macksville bridge and extend its service life
- Minimise impacts on the social environment, heritage, natural environment, road traffic and existing sensitive receivers
- Provide best value for money rehabilitation options, considering both capital and future maintenance costs.

## Options considered

In order to meet the proposal objectives the following options where identified and considered:

Option 1: Do nothing

The 'do nothing' option involves not undertaking any rehabilitation work on Macksville Bridge, which would lead to further deterioration of the paint work and corrosion of the steel work.

Option 2: Undertake rehabilitation and painting works

The alternative option is to undertake the required rehabilitation works at Macksville Bridge. This option involves deck repairs, pier strengthening and concrete durability works, steel rehabilitation and bridge repainting, to prevent deterioration of the bridge and promote service life.

Option 2 included to sub options related to how the works would be undertaken:

- Option 2a: Undertake the works with full bridge closure to all traffic. This option involves works being undertaken during a full bridge closure to general traffic, allowing the work site, including scaffolding and containment, to be efficiently and safely set up for the duration of the proposal or its individual phases as necessary. A traffic detour would be put in place for all vehicles.
- Option 2b: Undertake the works and maintain a single bridge lane open to all traffic and/or intermittent closure to all traffic. This option involves works occurring progressively along the bridge with a single lane of traffic maintained or intermittently opened/closed, requiring the work site to be setup and moved around a live traffic flow. This option would still require some traffic detours for short durations, as well as increase travel time for the road users using the bridge due to traffic control on the single lane over the bridge.

Option 1 is unsuitable as it does not meet any project objectives. The preferred option for the proposal is Option 2. Option 2b was identified as the preferred option as Option 2a would result in unacceptable impacts to traffic, road users and general access to and from the township of Macksville.

## Statutory and planning framework

The proposal is for road infrastructure facilities and is to be carried out by Transport and can therefore be assessed under Division 5.1 of the Environmental Planning and Assessment Act 1979 (EP&A Act). Development consent from Nambucca Valley Council is not required. This Review of Environmental Factors (REF) has examined and considered all matters affecting or likely to affect the environment by reason of the proposed activity.

In accordance with Section 5.5 of the EP&A Act, Transport, as the proponent and determining authority, must examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the proposal. As the proposal is for the rehabilitation of the Macksville Bridge and is to be carried out by Transport and can therefore be assessed under Division 5.1 of the *Environmental Planning and Assessment Act 1979*. Development consent from council is not required.

## Community and stakeholder consultation

Extensive consultation about the proposal with stakeholders was undertaken beginning in early 2023. Transport developed a proposal specific Communication Plan which identifies the stakeholders and the methods to keep them informed for the duration of the proposal. This plan covers all stages of the proposed work, including development and delivery.

Consultation with Nambucca Valley Council has been undertaken through an initial briefing meeting with Council on 2 May 2023, consultation meeting on 7 Dec 2023 and subsequent ongoing communications. High-level Council staff including the General Manager were in attendance at both of these meetings.

Regarding direct consultation with local community members Transport has undertaken the following:

- Established a Project Website with project information: https://www.transport.nsw.gov.au/projects/current-projects/macksville-bridge
- Published a Project Notification: Distributed to 1,970 properties in Macksville from 14 August 2023
- Facebook social media posts as a means to distribute the Project Notification flyer
- Project Early Consultation Survey – published externally
  - Undertook a community survey about the project to understand community questions and issue related to the works
  - The survey was published on the 14 August 2023 and was available for a period of two weeks
  - 379 responses were received.
- Community drop-in sessions were held between 11am–1pm and 4pm–6pm on 24 August at the CWA Hall, 31 Princess Street, Macksville
- An early consultation report with a summary of the feedback provided was published on the project website in December 2023.

Regarding direct consultation with local businesses Transport has undertaken the following:

- Undertook detailed consultation survey with 53 businesses with the Macksville CBD area. These businesses were provided early notice via phone call. Transport staff walked from business to business to drop off a paper survey form. Time was given to each business to discuss the potential project impacts with them on 7 Dec 2023.
- A survey was left with the business and collected on 15 December 2023.
- 32 written responses were received.
- Transport conducted proposal specific consultation meeting with Busways on 8 Feb 2024.

Transport also undertook proposal specific consultation with local emergency services including:

- Proving the Local Emergency Management Committee (LEMC) a project briefing on 21 Nov 2023. This committee includes representatives from local emergency services, health services, council and other government bodies.
- Conducting a consultation meeting with emergency services on 15 December 2023. In attendance were representatives from:
  - NSW Police
  - NSW Ambulance
  - Not in attendance were representatives from Fire and Rescue NSW who were provided with a briefing pack by email for review and comments and an offer to provide separate briefings as required.

Transport is committed to undertaking continued consultation with the community and stakeholders throughout all phases of the proposal in accordance with the Transport for NSW's Community Involvement Practice Notes and Resource Manual.

## Environmental impacts

The main environmental impacts of the proposal are summarised below:

### Biodiversity

The methodology for the terrestrial and aquatic flora and fauna assessment involved a desktop database assessment as well as a site specific microbat site survey and habitat assessment as described below.

Searches of the OEH BioNet Atlas of NSW Wildlife completed on the 15 May 2023 returned records of 54 threatened flora and 272 threatened fauna species within the search area (10 km x 10 km area). The protected matters search tool (PMST) completed on 12 May 2023, identified 90 threatened species (18 flora and 82 fauna species) listed under the EPBC Act as species that are likely to occur or may occur within the search area. 64 migratory species listed under the EPBC Act were identified within the search area by the PMST. Six threatened ecological communities listed under the EPBC Act are identified within the search area: Coastal Swamp Oak Forest of New South Wales and South East Queensland ecological community, Littoral Rainforest and Coastal Vine Thickets of Eastern Australia, Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland, Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions and Lowland Rainforest of Subtropical Australia. Due to the highlight disturbed nature of the proposal are with the majority of works being undertaken on an existing bridge, it is highly unlikely the project will impact on any listed species or community. Microbat survey and habitat assessments results indicated that the majority of Macksville Bridge does not provide suitable roosting habitat for microbats.

A review of the Department of Primary Industries fisheries NSW Spatial Data on 16 May 2023 identified the Nambucca River as part of the key fish habitat for the Northern Rivers area, with the freshwater fish community listed as good. However no threatened freshwater fish species were recorded.

Construction has the potential to impact biodiversity through, minor ground disturbance of previously disturbed areas, trimming of vegetation overhanging compounds and potential impacts to aquatic environments. Once operational, the bridge would not have any impacts to biodiversity that differ from current conditions. Appropriate management measures have been recommended to manage these impacts.

The proposal is not likely to significantly impact threatened species or ecological communities or their habitats, within the meaning of the *Biodiversity Conservation Act, 2016* or *Fisheries Management Act 1994* and therefore a *Species Impact Statement* or Biodiversity Development Assessment Report is not required. The proposal is not likely to significantly impact threatened species, ecological communities or migratory species, within the meaning of the EPBC Act.

### Traffic and transport

A traffic and transport assessment (GHD, 2024) was prepared to assess the potential transport impacts associated with each discreet stage of the proposal including the impact of single land operation and full closure of the bridge. During most of the works, single lane (or contra-flow) operation will be enacted, in which temporary traffic signals will be placed at both the southern and northern approach to Macksville Bridge, to allow for bridge works to be undertaken. Delays in travel time of about two minutes are expected for both

directions of travel, with increased delays for northbound travel. Noting the proximity of temporary signals to the signalised intersection of Giinagay Way and Wallace Street, it is recommended that the existing signals (cycle times) at Wallace and Partridge streets be aligned with the operation of the temporary signals across the bridge.

Noting the limitation in the existing traffic models (where there may not be sufficiently robust to model use of local roads as potential detours by residents), the following additional mitigation measures are recommended to be further explored, noting residents are likely to make their own informed decisions to minimising delays during the rehabilitation of Macksville Bridge. Further, should safety or efficiency concerns arise, Transport requires discretion to implement additional changes as it relates to access to Giinagay Way. This may include:

- Establishing detours using local roads (in consultation with the Nambucca Valley Council) to access Giinagay Way at the Boundary Street intersection (Refer to Figure 3-1), particularly for southbound movements. This would enable prioritisation of the traffic signals at Partridge and Wallace streets for northbound movements. Should traffic conditions deteriorate, this could include a potential ban of all right-turns at Wallace Street traffic signals.
- Closing Winifred Street left-out / right-out, should Winifred Street be used as a “rat-run”, where it may impact the operation of the Wallace Street signals.
- Closure of River Street West left-out, should River Street west be used as a “rat-run”.

Early liaison has be undertaken with various stakeholders to inform the potential impacts (and mitigation measures) on various road user groups including:

- Nambucca Shire Council, including potential local road closures, detours and pedestrian crossing impacts
- Emergency services including NSW Ambulance, NSW Police, NSW Fire and Rescue, NSW Rural Fire Service and NSW State Emergency Services
- Bus operators, including Busways
- Local heavy vehicle operators in the region
- Local community members and businesses.

Noting the duration of works (including length of detours during full bridge closures), a network of advanced warning signs is also recommended, which includes potential increased enforcement of the emergency u-turn bays on the Pacific Highway (with supporting signage), ensuring vehicles are directed to the appropriate interchanges to undertake safe turning movements (e.g. via the Nambucca, Old Coast Road and Bald Hill Road interchanges).

Based on the study findings, modelling and mitigation measures outlined in this report, it is considered that road user impacts associated with the Macksville Bridge Rehabilitation could be appropriately managed.

## Noise and vibration

A noise and vibration assessment (GHD, 2024) was prepared to assess the potential construction and operational noise and vibration impacts associated with the proposal.

During construction, both daytime and night works would be undertaken. Whilst the majority of works would be scheduled during standard hours extended working hours will be required during certain stages of the proposal. This includes nightworks and works on Sundays. This is to enable single lane operation and full bridge closures while minimising traffic impacts for the community. The works stages and time of day for these are described as:

- Stage 1 – Pier Strengthening / Concrete Durability – Standard hours
- Stage 2 – Steel rehabilitation – Standard hours, extended hours and night works
- Stage 3 – Bridge Painting – Standard hours
- Stage 4 – Deck Repairs – Standard hours, extended hours and night works.

A conservative assessment of the nosiest machinery and equipment that may be used during each of these scenarios was undertaken to address the worst-case potential noise impacts from the project. Typically noise level generated by the proposal will be less than the scenarios assessed.

Noise modelling indicates that a number of receivers are predicted to exceed the highly noise affected level of 75 dBA during all construction scenarios modelled. The predicted noise exceedances are due to the nature of the proposed activities and their proximity to the nearest sensitive receptors. The fact that exceedances have been identified does not indicate that the proposed activities cannot be undertaken, but that care needs to be taken to identify feasible and reasonable mitigation and management measures that can be implemented to minimise the potential impacts.

Proposed noise mitigation and management recommendations have been made to appropriately manage potential noise impacts associated with the project. These include sources, path and receptor measures in addition to extensive consultation and notification of noisy works. These works will be conducted in accordance with the recommendations of the Noise Assessment and the procedures listed within the assessment. How this will be managed will be outlined in the Construction Environmental Management Plan.

Once the works are completed and the road returns to usual operation there is not expected to be any appreciable change to noise compared to the current operation of the bridge.

## Non-Aboriginal heritage

The Macksville Bridge, also known as the 'Nambucca River Bridge' (Section 170 Item No. 4311596) was built in 1931 and is located at Macksville, NSW. The bridge was the first steel truss bridge to be constructed in NSW with caissons consisting of timber cylinders and created an important regional gateway landmark. The bridge has been assessed as being locally significant. Routine inspections in July 2021 led to immediate repairs being required. A Statement of Heritage Impact (SoHI) Everick, 2024) was prepared to assess the heritage significance of the bridge and the potential impact to this significance as a result of the proposed works.

The proposed works are multi-staged and include a wide scope of repair and maintenance work on the bridge. The majority of the work will have a positive or neutral heritage impact. The deck repairs, painting and cleaning are all positive impact as they both help maintain and restore the bridge to its initial design without affecting original fabrics. The pier strengthening will result in a permanent minor change in the thickness of the piers but this will be minor. The visual aspect of the bridge's heritage significance will be heavily impacted for the short term. However, the scaffolding, material screening, barges and jetties are temporary additions and should not impact the fabric of the bridge, provided penetrations are minimised to the extent practical. The installation of bird spikes and steel repairs to the walkway will have minor impacts to the bridge's fabrics and visual outlook.

Works that will have a moderate impact on the heritage significance of the bridge, such as the concrete works around the piers or the steel works, are essential to the ongoing use of the bridge. Although these works will be affecting the original bridge fabric, they will also maintain the integrity of the bridge and preventing future corrosion and damage.

Visually the heritage significance of the bridge will only be impacted in the short term and these works will be reversed at the conclusion of the proposal. A portion of the original metal and concrete fabric of the bridge are being impacted, however these are essential works for the ongoing use and maintenance of the bridge. The main heritage significance associated with the bridge is its importance to the community as a river crossing and the Pratt Truss design. The works will not alter either of these qualities of the bridge. The bridge will continue to allow vehicles and pedestrians to move across the Nambucca River, even during the majority of the works schedule. The Pratt Truss design will be maintained due to the steel works and the overall maintenance of the bridge.

Once operational no major impacts to the fabric of the bridge are proposed as part of this proposal.

## Socio-economic

Due to the significance of the bridge in relation to the township of Macksville and the potential for the proposal activities to impact on the local community and businesses a proposal specific Socio-Economic Impact Assessment (SEIA) (GHD, 2024) was prepared. The SEIA has been prepared in accordance with the requirements of a moderate level of assessment under the *Environmental Impact Assessment Practice Note: Socio-economic assessment* (NSW Government, 2020). This included undertaking SEIA specific consultation with a range of stakeholders within Macksville including a survey which received written feedback from 32 businesses to determine potential impacts.

The construction of the proposal is expected to take over three years. The community would experience impacts to accessibility associated with bridge and lane closures required to safely undertake the works. This includes changed access between North and South Macksville, the town centre, and public spaces along the

river. Construction activities would result in changes to local amenity which may be experienced by residents, business owners, employees and customers, and users of the river and foreshore.

Operational impacts are identified as generally all being positive. The repairs to the bridge will maintain commuter safety, elongate the life of the bridge and provide continued access across the river and improve the visual appearance of the bridge and local amenity.

### Other environmental aspects

This REF also assessed impacts associated with other relevant environmental aspects, including:

- Hydrology, flooding and water quality
- Soils
- Aboriginal cultural heritage
- Landscape character and visual
- Property and land use
- Waste and resource use
- Cumulative impacts.

The REF finds that the above environmental aspects the construction and operation would be managed by implementation of safeguards and management measures outlined in Section 7.2.

## Justification and conclusion

The REF has examined and considered, to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the proposed activity. The proposal, as examined in this REF, would be unlikely to result in a significant impact on the environment. Therefore, it is not necessary for an environmental impact statement to be prepared or for approval to be sought from the Minister for Planning under Division 5.2 of the EP&A Act.

The proposal would not result in any significant impacts upon threatened species or ecological communities and as such a Biodiversity Development Assessment Report or Species Impact Statement is not required. The Proposal is subject to assessment under Division 5.1 of the EP&A Act. Consent from Council is not required.

The completed proposal will improve the structural integrity of the exiting bridge. In doing so the works will be undertaken in a manner sympathetic to the heritage fabric and appearance of the bridge. Works have been planned to minimise impacts to vehicular and pedestrian traffic to the extent practical whilst certain essential works are undertaken during single lane operation or full bridge closures. A range of community and stakeholder consultation, including with emergency services has been and will continue to be undertaken for the duration of the project to further minimise impacts. Construction and operational impacts associated with the proposal are considered acceptable with the implementation of safeguards and management measures outlined in Section 7.2.

## Display of the review of environmental factors

This REF is on display for comment for four weeks from 3 June 2024. You can access the documents in the following ways:

**Internet**

The documents are available as pdf files on the Transport for NSW website at:

https://www.transport.nsw.gov.au/projects/current-projects/macksville-bridge

## How can I make a submission?

To make a submission about this proposal, please submit your written comments through the project website:

https://www.transport.nsw.gov.au/projects/current-projects/macksville-bridge

Submissions will be managed in accordance with the *Transport for NSW Privacy Statement*. A copy can be made available upon request.

## What happens next?

Transport will collate and consider the submissions received during public display of the REF.

After this consideration, Transport will determine whether or not the proposal should proceed as proposed and will inform the community and stakeholders of this decision.

If the proposal is determined to proceed, Transport will continue to consult with the community and stakeholders prior to and during construction.

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# 1. Introduction

This chapter introduces the proposal and provides context for the environmental assessment. In introducing the proposal, the objectives and proposal development history are detailed and the purpose of the report provided.

## 1.1 Proposal identification

Transport for NSW (Transport) proposes to undertake rehabilitation works on the Macksville Bridge (B1873) (the proposal) over the Nambucca River on Giinagay Way, Macksville in New South Wales (NSW).

Key features of the proposal include:

- Establishment of ancillary facilities and progressive implementation of environmental controls.
- Installation of a temporary construction jetty and scaffold in different stages as required to complete the works.
- Use of barges and boats within the waterway as required to complete the works.
- Installation of traffic control in different arrangements as required to complete the works.
- Deck repairs and waterproofing to prevent rainwater ingress below the deck and rectify extensive cracking.
- Removal and replacement of failed bridge joints.
- Installation of a durability treatment or seal membrane to the entire concrete bridge deck.
- Encasing of Piers 4, 5 and 6 with concrete to restore structural capacity to these piers (both above and below the water).
- Installation of a sacrificial anode cathodic protection system (SACP) to all eight piers to protect the steel reinforcement.
- Concrete patching on all piers to rectify damage or areas of concrete spalling.
- Removal of the temporary support beam in Span 1/Pier 1 and installation of permanent support solution. This same solution will be installed on Span 9/Pier 8.
- Steel repairs to all bridge spans to rehabilitate any section loss, cracking or in any area where strengthening is required. This includes welding, drilling, bolting on new plates and full member replacement where required. Corroded rivets and bolts will be replaced with structural bolts as required.
- Servicing and maintenance of bridge bearings, including corrosion treatment. If a bearing cannot be repaired it will be replaced.
- Installation of scaffold with encapsulation in stages to capture existing paint by extraction system when blasting.
- Blasting and repainting all nine spans including the walkway.
- Installation of new pedestrian handrail along the bridge with an updated design.
- Installation of new guardrail and safety barrier along the bridge and approaches.
- General cleaning of the bridge including the deck, bird droppings and scuppers.
- Installation of bird spikes at nesting locations.
- Maintenance of scour protection at abutments.
- Walkway maintenance.
- Demobilisation of all construction equipment and reinstatement of work areas to original condition.

A site compound would be established on the northern side of the bridge with installation of scaffold as required for access. A temporary jetty, barges, and boats would also be required to facilitate the works.

The proposal is planned to be delivered in four stages and expected to take about 3.5 years to complete. Stage 1 involves pier strengthening and concrete durability works, Stage 2 involves steel rehabilitation, Stage 3 involves bridge painting and Stage 4 involves deck repairs. This staging may change or be subject to some works being undertaken concurrently to allow for works to be finished as soon as possible. Stage 1 is expected to commence in late-2024.

The location of the proposal is shown in Figure 1-1.

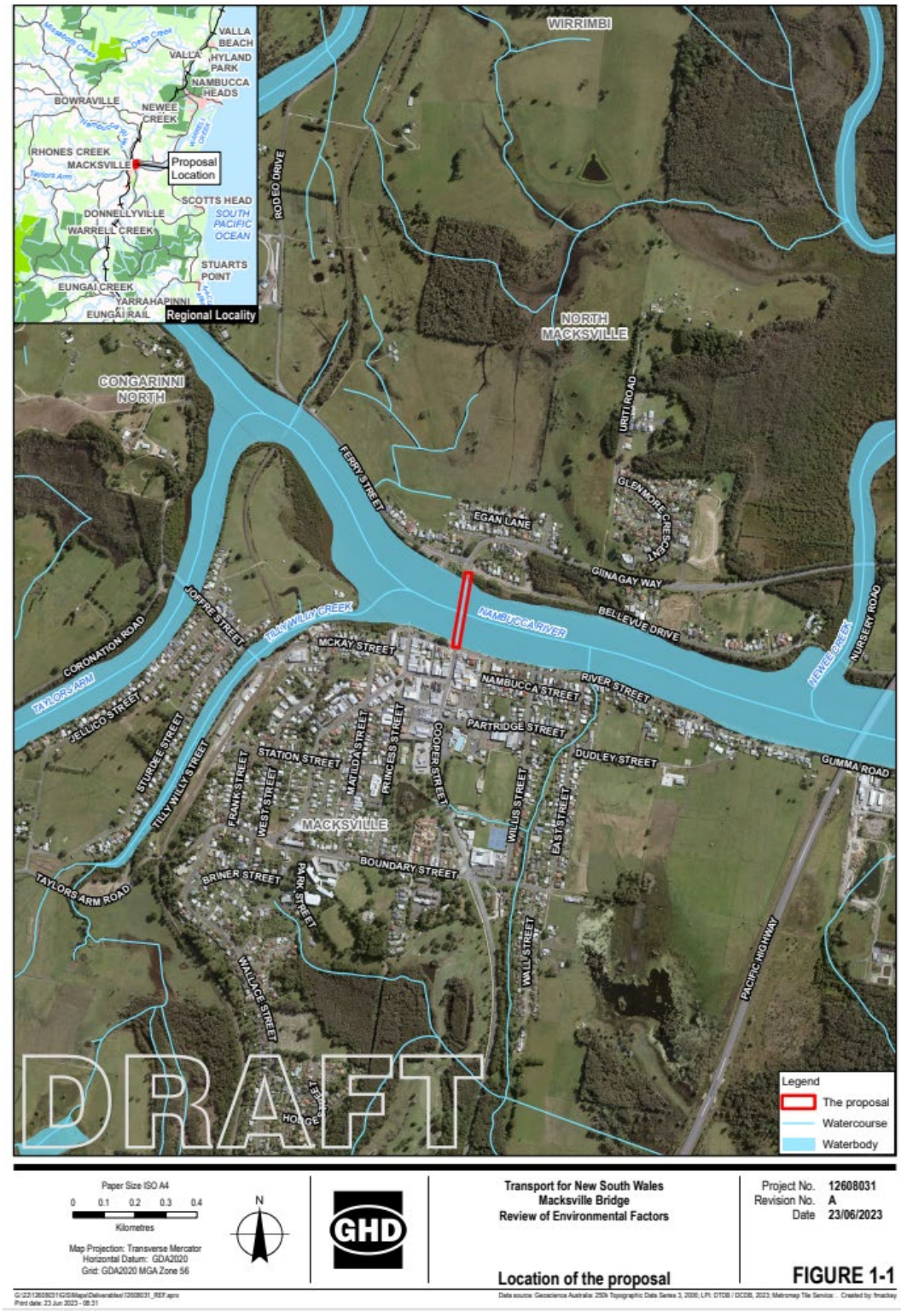



Figure 1-1: Location of the proposal

## 1.2 Purpose of the report

This review of environmental factors (REF) has been prepared by GHD Pty Ltd (GHD) on behalf of Transport. For the purposes of these works, Transport is the proponent and determining authority under Division 5.1 of the *Environmental Planning and Assessment Act 1979 (NSW)* (EP&A Act).

The purpose of the REF is to describe the proposal, to document the likely impacts of the proposal on the environment, and to detail mitigation and management measures to be implemented.

The description of the proposal and assessment of associated environmental impacts has been undertaken in the context of Section 171 of the Environmental Planning and Assessment Regulation 2021, the factors in Guidelines for Division 5.1 assessments, (DPE 2022), Roads and Related Facilities EIS Guideline (DUAP 1996), the *Biodiversity Conservation Act 2016* (BC Act), the *Fisheries Management Act 1994* (FM Act), and the Australian Government's *Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)* (EPBC Act).

In doing so, the REF helps to fulfil the requirements of:

- Section 5.5 of the EP&A Act including that Transport 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 strategic assessment approval granted by the Commonwealth Government under the EPBC Act in September 2015, with respect to the impacts of Transport's road activities on nationally-listed threatened species, ecological communities and migratory species.

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 (EIS) to be prepared and approval sought from the Minister for Planning under Division 5.2 of the EP&A Act
- The significance of any impact on threatened species as defined by the BC Act and/or FM Act, in section 1.7 of the EP&A Act and therefore the requirement for a species impact statement (SIS) or a biodiversity development assessment report (BDAR)
- The significance of any impact on nationally-listed biodiversity matters under the EPBC Act, including whether there is a real possibility that the activity may threaten long-term survival of these matters, and if offsets are required and able to be secured
- The potential for the proposal to significantly impact any other matters of national environmental significance (MNES) or Commonwealth land and the need, subject to the EPBC Act strategic assessment approval, to make a referral to the Australian Department of Climate Change, Energy, the Environment and Water (DCCEEW) for a decision by the Commonwealth Minister for the Environment on whether assessment and approval is required under the EPBC Act.

# 2. Need and options considered

This chapter describes the need for the proposal in terms of its strategic setting and operational need. It identifies the various options considered and the selection of the preferred option for the proposal.

## 2.1 Strategic need for the proposal

Macksville Bridge (B1873) was built in 1931 and is located on Giinagay Way over the Nambucca River. The total length of the bridge is 218.3 metres consisting of nine spans comprised of two steel beam (10.66 metre) approach spans, five steel plate through (PGIRD) girder (21.94 metres) spans, and two steel truss (43.28 metre) spans.

Before 2017 Macksville Bridge was located on the Pacific Highway. This bridge was a crucial link between Sydney and Brisbane carrying very high traffic volumes with a large percentage of heavy vehicles. Routine maintenance on the bridge was often difficult due to the challenges involved with closing or load limiting the bridge to enable works to take place. During this time, routine monitoring noted the deterioration of some of the bridge's structural elements, including deterioration of the painting system, corrosion of steel elements and chloride ingress to the concrete piers.

A routine inspection in July 2021 resulted in immediate repairs being required. These were undertaken at night under a full bridge closure over a period of two weeks. The bridge was load limited during the daytime. Further work is now required to maintain the structural integrity of the bridge and ensure safety for road users.

The proposal is considered to be consistent with the objectives of the following Australian and State government strategic documents:

- Staying Ahead: State Infrastructure Strategy 2022-2024 (Infrastructure NSW, 2022)
- Future Transport Strategy 2056 (Transport, 2018)
- North Coast Regional Plan 2041 (DPE, 2022)
- Local Strategic Planning Statement: Nambucca Valley Council
- Community Strategic Plan 2027.

The consistency of the proposal with these plans is discussed further below.

### 2.1.1 Staying Ahead: State Infrastructure Strategy 2022-2042

Staying Ahead: State Infrastructure Strategy 2022-2042 (Infrastructure NSW, 2022) builds on the NSW Government's major long-term infrastructure plans over the last seven years from the 2012 State Infrastructure Strategy and Long Term Transport Master Plan. Staying Ahead: State Infrastructure Strategy 2022-2042 is the fourth edition since the initial 2012 State Infrastructure Strategy.

Staying Ahead: State Infrastructure Strategy 2022-2042 sets out Infrastructure NSW's advice on the infrastructure needs and priorities of NSW for the next 20 years, and beyond. Based on the proposal's scope of works (Section 3) and objectives (Section 2.3), the proposal specifically supports relevant objectives, including:

- Boost economy-wide productivity and competitiveness: Supporting the strategic direction to deliver efficient transport networks to support thriving cities, businesses and communities
- Service growing communities: Supporting the strategic direction to improve access to efficient, quality services through better use of assets and a better mix of physical infrastructure and technology-enabled solutions
- Embed reliability and resilience: Supporting the strategic direction to establish a rigorous and funded program to identify and remedy assets most likely to cause service failure
- Integrate infrastructure, land use and service planning: Supporting the strategic direction to coordinate infrastructure, land use and service planning to meet housing, employment, industry and community needs.

### 2.1.2 Future Transport Strategy 2056

The NSW Future Transport Strategy 2056 (Transport 2018) outlines a clear framework to address transport challenges in NSW over the next 40 years and is an update of the NSW Long Term Transport Master Plan released in 2012. It integrates planning for roads, freight and all other modes of transport and sets out initiatives, solutions and actions to meet NSW transport challenges. The proposal supports the existing and future development of the area and aligns with the following Future Transport Strategy 2056 visions:

- Liveability, amenity and economic success of communities and places are enhanced by transport
- Every customer enjoys safe travel, regardless of transport mode of location, across a high-performing, integrated and efficient network
- Transport enable everyone to get the most out of life, wherever they live an whatever their age, ability or personal circumstances.

Specifically, the proposal is consistent with the Future Transport Strategy 2056 by:

- Providing bridge rehabilitation to facilitate safe and efficient connections between Macksville and Macksville North.

### 2.1.3 North Coast Regional Plan 2041

The North Coast Regional Plan 2041 (DPE, 2022) identifies Macksville as the main centre of the Nambucca Valley, providing essential retail, commercial and land community services and includes a direction to *'enhance* [the] *liveability for current and future residents of the Nambucca Valley through infrastructure investment and opportunities available from existing assets.'*

The Plan also identifies collaborative activities to '*ensure that centres experiencing high growth have well planned and sustainable transport options, place-based Transport Plans will be developed for key cities and centres across the North Coast region'.*

The proposal will support the economic growth and liveability of Macksville, while continuing to maintain local access between Macksville and Macksville North.

### 2.1.4 Local Strategic Planning Statement 2020: Nambucca Valley Council

The Local Strategic Planning Statement 2020: Nambucca Valley Council (LSPS) has been prepared to comply with the EP&A Act and aims to provide a vision for the Nambucca Valley with a focus on land use planning matters including housing, employment, and environmental management. It includes or identifies the basis for strategic planning in the area, have regard for economic, social, and environmental matters.

The LSPS highlights the importance of the Nambucca River foreshore and River Street, where many of the historic buildings remain today. The protection of the historic buildings and improvement of the river foreshore, provides a unique opportunity to build on the character of Macksville as an historic, rural market town and enhance the attraction of Macksville to visitors to boost the local economy.

The LSPS also outlines actions that council will undertake in relation to land use planning, some of these actions include:

- Continue to implement Macksville Revitalisation Plan and post bypass initiatives. Identify priorities and funding mechanisms to support the implementation of the improvements delivering an attractive and liveable riverside town that showcases its heritage.
- Improve accessibility from rural and coastal villages to town centres. Seek opportunities to review key vehicle routes particularly with respect to emergency management and natural hazards such as flooding and bushfire.

### 2.1.5 Community Strategic Plan 2027

The Community Strategic Plan 2027 (CSP) is a high-level plan, developed in partnership with the community, to outline the future for the community of the Nambucca Valley. The plan sets out all the strategic priorities, outcomes and aspirations for the future of the local community. It is based on four key themes which reflect the following aspirations of the community:

- Aspiration 1: Caring for our community
- Aspiration 2: Caring for our environment
- Aspiration 3: Living well
- Aspiration 4: Promoting prosperity.

The proposal is generally in keeping with all of the community aspirations listed above.

## 2.2 Limitations of existing infrastructure

The Macksville Bridge provides local access over the Nambucca River between Macksville and Macksville North. The bridge has a single lane in each direction over the bridge with a separated walkway that runs alongside and walkways passing underneath the bridge at each end.

As discussed in Section 2.1, prior to 2017 the Macksville Bridge was located on the Pacific Highway carrying very high traffic volumes with a large percentage of heavy vehicles, making routine maintenance challenging. The Pacific Highway has since been realigned and now crosses the Nambucca River to east over the Phillip Hughes Bridge.

Routine monitoring of the Macksville Bridge noted the deterioration of some of the bridge's structural elements, including deterioration of the painting system, corrosion of many of the steel elements and chloride ingress to the concrete piers. Repairs were undertaken in 2021 under a full bridge closure over a two week period, with the bridge being load limited during the daytime.

## 2.3 Proposal objectives and development criteria

### 2.3.1 Proposal objectives

The objectives of the proposal include:

- Ensure the safety of road users, members of the public and the project team/workforce
- Maintain the structural integrity of Macksville bridge and extend its service life
- Minimise impacts on the social environment, heritage, natural environment, road traffic and existing sensitive receivers
- Provide best value for money rehabilitation options, considering both capital and future maintenance costs.

### 2.3.2 Development criteria

The development criteria for the proposal include:

- Consideration of potential environmental impacts
- Consideration of the Macksville Bridge as a local heritage item
- Improve safety for all road users
- Fit for purpose design to meet the required design life for the identified need that maximises the project "value for money"
- Consideration of road function, local land use activity and access needs
- Design that meets workplace health and safety (WHS) legislation and in particular is safe, efficient and practical for workers and those in the vicinity during temporary traffic arrangements

- Managing construction and design risk.

The design criteria are provided in further detail in Section 3.2.1.

### 2.3.3 Urban design objectives

Urban design objectives for the proposal include:

- Ensure the Macksville Bridge rehabilitation maintains the character of the bridge within the setting of Macksville to Macksville North
- Ensure the proposal responds to its adjoining land uses
- Maintain and enhance the Macksville bridge as the key local connector between Macksville and Macksville North
- Design with consideration for the ongoing maintenance needs of the asset.

The design criteria are provided in further detail in Section 3.2.1.

## 2.4 Alternatives and options considered

### 2.4.1 Methodology for selection of preferred option

The options considered for the proposal have been assessed against the following criteria:

A. Ability of the option to satisfy the proposal objectives
B. Cost
C. Constructability
D. Impacts on road users
E. Impacts on the environment
F. Impacts on heritage values
G. Longevity of the bridge
H. Duration of work
I. Safety to workers
J. Resource availability and ability of the work to meet the objectives of ecologically sustainable development
K. Impacts on stakeholders and neighbours.

In addition, previous experience in paint removal from bridges and environmental requirements to meet AS/NZS 4361.1:2017 Guide to hazardous paint management Lead and other hazardous metallic pigments in industrial applications were influential in the methodology for selection of the preferred option.

### 2.4.2 Identified options

**Option 1: Do nothing**

The 'do nothing' option involves not undertaking any rehabilitation work on Macksville Bridge, which would lead to further deterioration of the paint work and corrosion of the steel work.

**Option 2: Undertake rehabilitation and painting works**

The alternative option is to undertake the required rehabilitation works at Macksville Bridge. This option involves deck repairs, pier strengthening and concrete durability works, steel rehabilitation and bridge repainting, to prevent deterioration of the bridge and promote service life.

This option requires closure of the bridge to perform the required works. Under this option, two sub-options have been considered in relation to the bridge closures, as follows:

Option 2a: Undertake the works with full bridge closure to all traffic

This option involves works being undertaken during a full bridge closure to general traffic, allowing the work site, including scaffolding and containment, to be efficiently and safely set up for the duration of the proposal or its individual phases as necessary. A traffic detour would be put in place for all vehicles.

Option 2b: Undertake the works and maintain a single bridge lane open to all traffic and/or intermittent closure to all traffic

This option involves works occurring progressively along the bridge with a single lane of traffic maintained or intermittently opened/closed, requiring the work site to be setup and moved around a live traffic flow. This option would still require some traffic detours for short durations, as well as increase travel time for the road users using the bridge due to traffic control on the single lane over the bridge.

### 2.4.3 Analysis of options

**Option 1: Do nothing**

The 'do nothing' option is not considered acceptable as the bridge would fall into a state of disrepair and become unsafe for motorists to use and would eventually need to be closed. The 'do nothing' option would result in:

- Reduced longevity of the bridge, with reduced lifespan and eventual decommissioning of the bridge
- Impacts on road user safety due to decreased structural integrity of the bridge
- Impacts on the heritage value of the bridge through loss of the bridge in the long-term
- Impacts on the surrounding environment due to release of paint into the soil and waterway adjacent to the bridge
- Impacts on stakeholders and neighbours through loss of the bridge and a local road connection in the long-term.

**Option 2a: Undertake the works with full bridge closure to all traffic**

Option 2a is the most efficient, cost effective and safest option to progress the works; however it results in a detour for all traffic for the duration of the works. This option would cause significant disruption for local traffic. This option is not considered acceptable due to:

- Unacceptable impacts on some road users and the local traffic network
- Delays or extended travel times for emergency services on one side of the river attempting to attend to an emergency on the opposite side of the river.

**Option 2b: Undertake the works and maintain a single bridge lane open to all traffic and/or intermittent closures to all traffic**

This option would permit all vehicles to use the bridge crossing and local road network for the majority of the works period, minimising impacts to road users; however staged full bridges closures overnight would be required for complex steel repairs. This option would require the temporary and single lane closure of River Street during certain stages. This is required for the safe undertaking of these works, with one lane of the bridge to be kept open the majority of the time. Local travel times would only experience minor impacts. This option is considered the most acceptable option due to:

- Reduced safety risks to the workforce carrying out the most complex tasks
- Reducing construction traffic impacts to as low as reasonably practical
- Minimising the maintenance cost whilst maximising the service life of the bridge
- Improved safety for road users through improved structural integrity of the bridge
- Protecting the heritage values of the bridge by retaining the bridge and improving the longevity of the bridge.

## 2.5 Preferred option

Option 1 is unsuitable as it does not meet any proposal objectives. The preferred option for the proposal is Option 2, specifically Option 2b. The options assessment determined that Option 2b was superior to Option 2a the following reasons:

- Ability of the option to satisfy the proposal objectives – This option achieved all proposal objectives
- Cost – Higher cost then 2a, but the cost increase is outweighed by the reduced community impacts
- Constructability – Constructability is similar between the options
- Impacts on road users – On balance 2b has overall reduced impacts as a result of minimising the need for extended periods of total closure of the bridge
- Impacts on the environment – Similar between the options
- Impacts on heritage values – Similar between the options
- Longevity of the bridge – Similar between the options
- Duration of work – The total duration of the works is longer under option 2b but the total time of highly impacting work (noise activities) would be similar and total traffic impacts would be reduced
- Safety to workers – Similar between the options
- Resource availability and ability of the work to meet the objectives of ecologically sustainable development
- Impacts on stakeholders and neighbours – Similar to duration of work above, impacts may be spread across a longer period but with longer period of respite between noisy out of hours works and reduced bridge closures and resulting traffic impacts.

Although this option would result in traffic impacts to road users, these impacts are vastly lower than Option 2a and have been reduced as far as practical while still maintaining safety for workers. Whilst the intermittent bridge closures would disrupt traffic flow, the quantum of closures required for Option 2b is significantly less than the closures required for Options 1 and 2a. The impacts are outweighed by the benefits of increased bridge longevity, protection of the heritage values of the bridge in the long-term, and reduced maintenance cost whilst extending the service life of the bridge. Option 2b is further described in Section 3.

# 3. Description of the proposal

This chapter describes the proposal and provides descriptions of existing conditions, the design parameters including major design features, the construction method and associated infrastructure and activities.

## 3.1 The proposal

Transport proposes to undertake rehabilitation works on the existing Macksville Bridge (B1873) over the Nambucca River on Giinagay Way, Macksville in New South Wales. Key features of the proposal include:

- Establishment of ancillary facilities and progressive implementation of environmental controls.
- Installation of a temporary construction jetty and scaffold in different stages as required to complete the works.
- Use of barges and boats within the waterway as required to complete the works.
- Installation of traffic control in different arrangements as required to complete the works.
- Deck repairs and waterproofing to prevent rainwater ingress below the deck and rectify extensive cracking.
- Removal and replacement of failed bridge joints.
- Installation of a durability treatment or seal membrane to the entire concrete bridge deck.
- Encasing of Piers 4, 5 and 6 with concrete to restore structural capacity to these piers (both above and below the water).
- Installation of a sacrificial anode cathodic protection system (SACP) to all eight piers to protect the steel reinforcement.
- Concrete patching on all piers to rectify damage or areas of concrete spalling.
- Removal of the temporary support beam in Span 1/Pier 1 and installation of permanent support solution. This same solution will be installed on Span 9/Pier 8.
- Steel repairs to all bridge spans to rehabilitate any section loss, cracking or in any area where strengthening is required. This includes welding, drilling, bolting on new plates and full member replacement where required. Corroded rivets and bolts will be replaced with structural bolts as required.
- Servicing and maintenance of bridge bearings, including corrosion treatment. If a bearing cannot be repaired it will be replaced.
- Installation of scaffold with encapsulation in stages to capture existing paint by extraction system when blasting. Temporary pedestrian walkway to be installed during this time.
- Blasting and repainting all nine spans including the walkway.
- Installation of new pedestrian handrail along the bridge with an updated design.
- Installation of new guardrail and safety barrier along the bridge and approaches.
- General cleaning of the bridge including the deck, bird droppings and scuppers.
- Installation of bird spikes at nesting locations.
- Maintenance of scour protection at abutments.
- Walkway maintenance.
- Demobilisation of all construction equipment and reinstatement of work areas to original condition.

An overview of the proposal is shown in Figure 3-1. Key design features are described in further detail in Section 3.2.3 and the proposed construction methodology is described in Section 3.3.

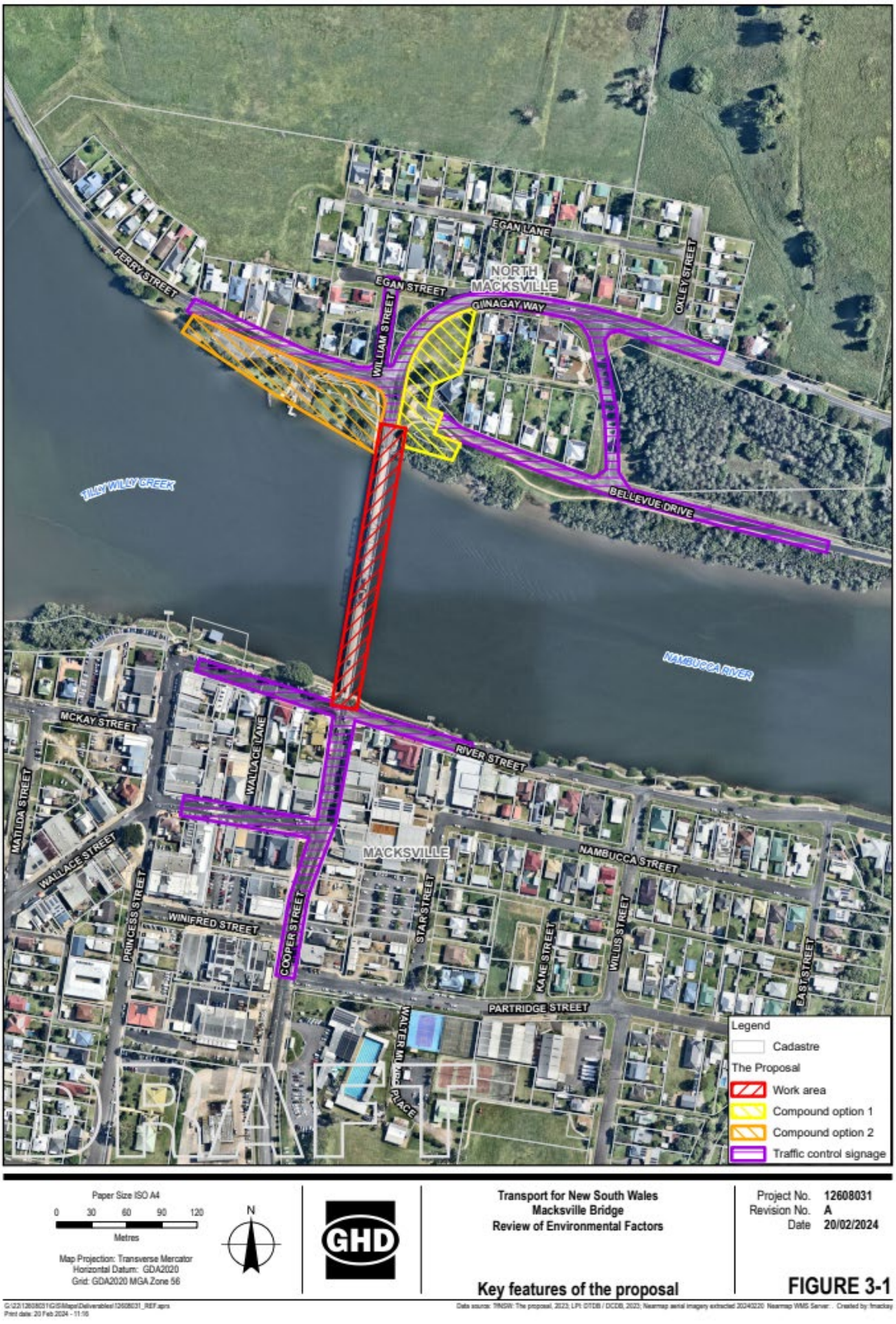



Figure 3-1: Key features of the proposal

## 3.2 Design

### 3.2.1 Design criteria

The proposal involves deck repairs, pier strengthening, concrete durability works, steel rehabilitation and bridge repainting, to prevent deterioration of the bridge and promote service life. The work involves the removal of chromium-based paint. Consequently, a containment system would be constructed in accordance with AS/NZS 4361.1:2017 Guide to hazardous paint management Lead and other hazardous metallic pigments in industrial applications. The final paint coat would align with the existing colour scheme (RMS Bridge Grey) to reduce impacts on heritage values.

Key design criteria for the proposal are:

- Align with heritage design requirements
- Install a paint system that provides protection and longevity to steel trusses
- Undertake the proposed works using containment systems and other controls so as to not cause environmental contamination.

### 3.2.2 Engineering constraints

Engineering constraints for the proposal primarily relate to the location of the bridge over a large water body and the requirement to completely contain the work due to the presence of chromium-based paint. The proposed work requires complete closure of the bridge for short durations during the total construction period with the use of alternative detours routes. Access under the bridge by boats and other vessels would be maintained under restrictions. Due to the nature of the bridge, its design and location it is not practical to inspect some areas of the structure until works begin and dismantling parts of the bridge will provide visual access. As a result, some minor modifications may be required to the works described in this section as evolving engineering constraints are identified, and the works are amended to rectify.

Other engineering constraints relate to the proximity of the proposal to the town of Macksville and the need to ensure that potential impacts on these land uses are minimised.

In addition, the bridge is heritage listed and materials and finishes must be in keeping with inherent heritage values.

### 3.2.3 Major design features

**Pier strengthening and concrete durability**

Piers 4, 5 and 6 would be encased in concrete from the bottom of the pier diaphragm to the riverbed (both above and below water). Some of the riverbed may need to be excavated around the piers by underwater divers. The pier will then be high pressure blasted or scabbled to remove any marine growth, algae and debris etc. Dowels would be drilled into the existing piers by underwater divers where necessary. A large formwork would be constructed around each pier to contain the concrete pour. Reinforcement would be installed, and the concrete would be poured using a special ‘anti washout’ concrete mix from pumps/ trucks parked on the bridge deck. The formwork may be sacrificial and stay in place or may be removed once the concrete has hardened (depending on the product chosen). Refer to Figure 3-2.

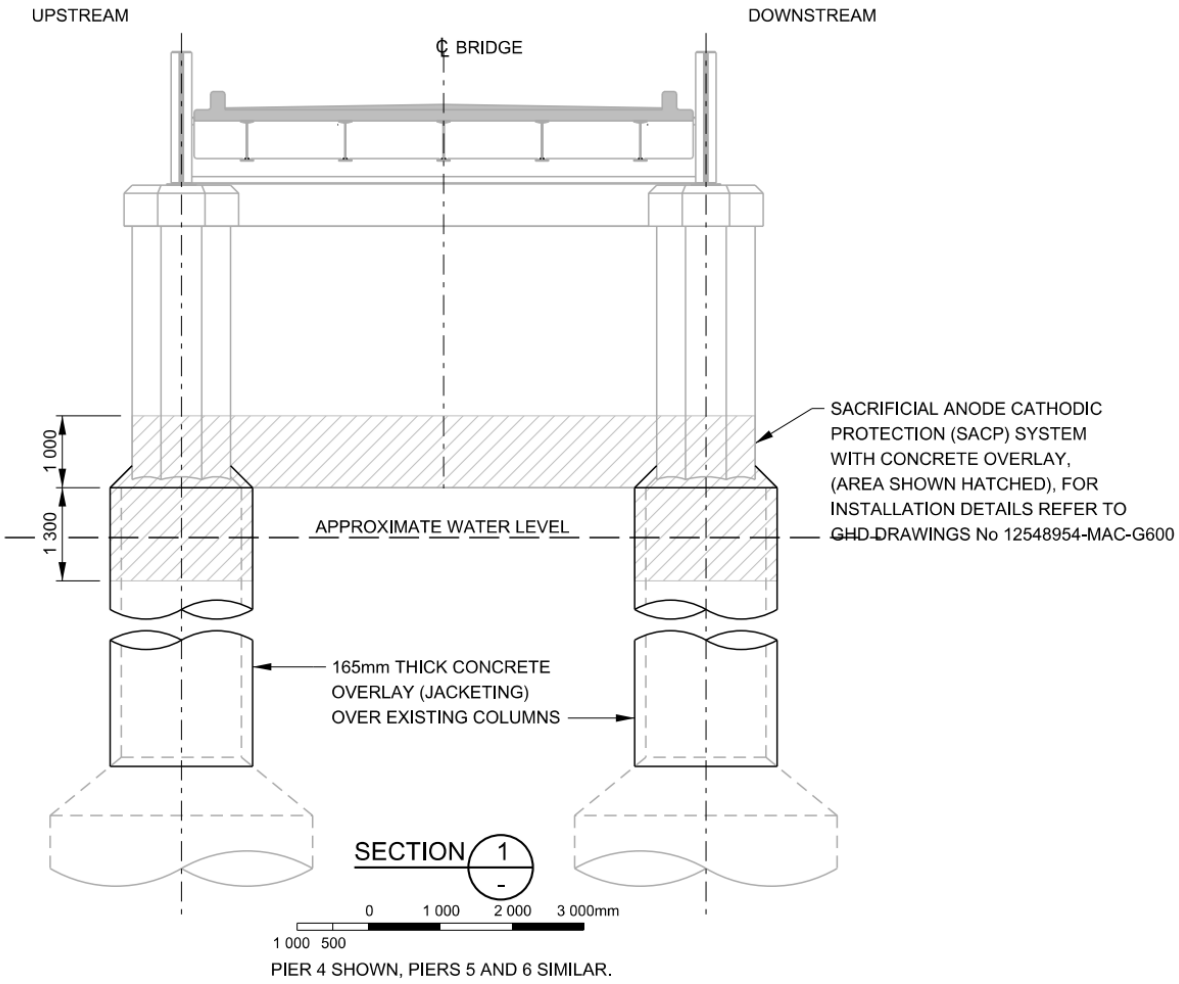



Figure 3-2: Rehabilitation of truss span piers

A Sacrificial Anode Cathodic Protection (SACP) system would be installed on all eight bridge piers, with anodes installed in the tidal, splash and submerged zones on both the piers and diaphragms. Each pier will be high pressure blasted or scabbled to remove any marine growth, algae and debris etc. Multiple sacrificial anodes would be attached to the existing piers and wired into the existing reinforcement. Reinforcement and formwork would be installed around each pier and the anodes would then be encapsulated in concrete (see Figure 3-3). The entire pier will then be painted with a durability coating.

Figure 3-3: Installation of cathodic protection – Wardell Bridge 2019

### Steel rehabilitation

Strengthening and rehabilitation works will be required where section loss, cracking, structural deficiency or other deterioration is identified. These works would include activities such as welding, drilling, bolting on new steel plates, installation of additional members and full steel member replacement where required. In addition, servicing, maintenance and corrosion treatment of bridge bearings will take place. Bridge bearing replacement may also be required subject to inspection. During these repairs external temporary bracing or support beams may need to be installed to support the bridge structure. Drilling into the existing bridge structure to install this bracing will be required. Corroded rivets and bolts will be replaced with structural bolts as required.

In 2021 temporary support beams were installed to support the underside of Span 9. This was due to corrosion of the stinger beam supports. These corroded supports will be replaced, and the temporary beams will be removed. This repair will also be undertaken on Span 1. To enable this repair extensive temporary works are required including installation of large temporary support beams on top of the bridge deck. A temporary scaffold/barge underneath the bridge would be required to undertake these works. The walkways under the end spans of the bridge will be closed to pedestrians during this work. Full bridge closures are required at night while the bridge is load limited during the day.

Figure 3-4: Temporary beam under Span 9 to be removed

### Bridge repainting

All steel structural elements (approximately 7,764 square metres in total) would be repainted with the bridge encapsulated in different stages. Scaffold would be erected around the span, which is then encapsulated in either thick plastic, rubber or ply-wood to contain any waste material (see Figure 3-5). The waste would be extracted, stored and then disposed of at a licensed waste facility. The existing paint would be blasted, and new paint (TfNSW Bridge Grey) applied. As the existing paint contains chromium it would be treated in accordance with AS/NZS 4361.1:2017 Guide to hazardous paint management, Part 1: Lead and other hazardous metallic pigments in industrial applications.

During encapsulation, the pedestrian walkway on the bridge would be enclosed, so a scaffold walkway would be constructed alongside the bridge to enable pedestrian access. The walkways under the bridge would be closed during the painting of the end spans. A single traffic lane would be in operation down the centre of the bridge through the scaffold to allow traffic to flow while the works are being completed.

Following blasting, and prior to painting, all structural elements will be inspected. Where the steel elements are deemed to be to degraded further steel rehabilitation/repairs will be undertaken.

Figure 3-5: Containment system – Raleigh Bridge 2018

**Deck repairs**

The current bridge joints are considered small movement joints with a 20 millimetre thick bead of rubberised sealant located between each of the concrete deck slabs. This existing sealant has broken away in multiple locations and would be removed and replaced. A durability coating or seal would be applied to the entire bridge deck to seal any cracks in the concrete and waterproof the deck. The finish and colour of the deck will depend on the product utilised.

## 3.3 Construction activities

### 3.3.1 Construction stages

Construction is proposed to be staged as shown in Table 3.1. Timeframes are indicative and may be subject to change.

Table 3-1: Staging timeframes

| Stage* | Description | Bridge Operation |
|---|---|---|
| Stage 1<br>(11 months) | Pier strengthening/ concrete durability | • Single Lane Operation – approximately 20 days intermittent<br>• Over Size Over Mass (OSOM) restrictions – approximately 20 days intermittent<br>• Closure of River Street turning lanes onto/off bridge – approximately 20 days intermittent |
| Stage 2<br>(8 weeks) | Steel rehabilitation | • Full Closure – approximately 20 nights<br>• Load limited single lane operation during daytime (no heavy vehicles) – approximately 20 days<br>• Over Size Over Mass (OSOM) restrictions – approximately 20 days<br>• Closure of River Street turning lanes onto/off bridge – approximately 20 days<br>• Closure of walkways under bridge |
| Stage 3<br>(2.5 years) | Bridge painting | • Single Lane Operation – approximately 2.5 years<br>• Over Size Over Mass (OSOM) restrictions – approximately 2.5 years<br>• Closure of River Street turning lanes onto/off bridge – approximately 5 months<br>• Interaction with traffic lights on Wallace Street to manage changed traffic flows<br>• Closure of walkways under bridge while painting end spans |
| Stage 4<br>(2 weeks) | Deck repairs | • Full Closure – approximately 5 nights<br>• Single Lane Operation – approximately 10 days<br>• Over Size Over Mass (OSOM) restrictions – approximately 10 days |

* The order and duration of these works may change based on several factors including community feedback, weather, availability of goods and services, project delays etc.

### 3.3.2 Work methodology

The indicative work sequence is summarised in Table 3-2. The work methodology would be further developed by the nominated contractor during the detailed design of the proposal in consultation with Transport.

Table 3-2: Work methodology

| Proposed works |
|---|
| **Site establishment** |
| Site establishment works may include, but not be limited to, the following:<br>• Establishment of construction compound which includes offices, toilets, storage containers, plant, parking, machinery, fencing lighting etc.<br>• Establishment of a temporary works jetty/pontoon in the river for access to the water<br>• Installation of traffic management control/devices as required<br>• Installation of scaffold as required<br>• Installation of environmental controls i.e. erosion and sediment control, monitoring etc.<br>• Installation of occupational health and safety controls/monitoring for workers during blasting and painting<br>• Float equipment, machinery and materials to site<br>• Removal of Council installed bridge lighting (for later installation on completion of works). |
| **Stage 1 - Pier strengthening/concrete durability** |
| Encasing Piers 4, 5 and 6 with concrete to restore structural capacity to these piers (both above and below the water). These works may include, but not limited to, the following:<br>• Excavation of the riverbed around the bridge piers to provide access to the pile cap<br>• High pressure water blasting or scabbling of the piers to remove any marine growth, algae and debris etc.<br>• Drill holes underwater within the existing piers and install dowels/chemical anchors to connect the new and old pier sections<br>• Install and tie reinforcement around the pile<br>• Construct formwork around each pile<br>• Pour concrete utilising an 'anti washout' specialised mix<br>• Form work will be removed or may be kept in place if its deemed sacrificial<br>• Encasing Piers 4, 5 and 6 with concrete to restore structural capacity to these piers (both above and below the water). |
| Installation of a SACP System to all eight piers to protect the steel reinforcement. These works may include, but not limited to, the following:<br>• High pressure water blasting or scabbling of the piers to remove any marine growth, algae and debris etc.<br>• Install anodes around the piers and diaphragm. Wire the anodes to the existing reinforcement.<br>• Install reinforcement around anodes and formwork.<br>• Encase anodes in concrete.<br>• Paint the entire pier with a durability coating. |
| Undertake concrete patching on all piers to rectify damage as required. |
| **Stage 2 - Steel rehabilitation** |
| Removal of the temporary support beam in Span 9 and installation of a permanent solution in Span 9 and Span 1.<br>These works may include, but not limited to, the following:<br>• Installation of temporary support beams to support the bridge span. Hangers may need to be installed through the deck.<br>• Removal of the temporary support beams. |

| Proposed works |
|---|
| • Repair and replacement of stringer beams and supports.<br>• Installation of additional strengthening members as required. |
| Steel repairs to all bridge spans to rehabilitate any section loss, cracking or in any area where strengthening is required. This includes welding, drilling, bolting on new plates, installation of additional members and full member replacement where required. Corroded rivets and bolts will be replaced with structural bolts as required. |
| Maintenance/replacement of the bearings, including corrosion treatment. |
| **Stage 4 - Bridge painting and updates** |
| Steelwork on the bridge will be repainted in its entirety. These works may include, but not limited to, the following:<br>• Install scaffold with encapsulation in stages (as required) to capture existing paint<br>• Install mechanical ventilation system to create negative pressure within the containment to extract all blast material/existing paint<br>• Blast the steelwork are repaint in accordance with TfNSW specification B223 and B220<br>• Dispose of all contaminated material at a registered waste facility. |
| Undertake minor steel repairs identified during the repainting process |
| General clean of bridge including bird droppings and scuppers |
| Installation of bird spikes at nesting locations |
| Maintenance of scour protection at abutments |
| Walkway maintenance including handrail replacement |
| Bridge guardrail/barrier replacement |
| **Stage 4 - Deck repairs** |
| Deck repairs and waterproofing to prevent rainwater ingress to below deck and rectify extensive cracking |
| Removal and replacement of failed bridge joints |
| Installation of a durability treatment to the entire concrete bridge deck |
| **Site decommissioning** |
| Ensure all waste is removed from site. All waste would be disposed at appropriately licensed waste facilities, and hazardous waste, including paint waste would be removed from site by a licensed transporter and disposed of in accordance with the legislation to a licensed waste facility. All hazardous waste would be tracked. |
| Remove scaffolding and containment |
| Remove site compounds |
| Rehabilitate sites including reinstalling Council lighting on the bridge |
| Remove traffic control signs and reopen bridge to traffic |

### 3.3.3 Construction hours and duration

Work will generally be conducted during:

- 7am to 6pm Monday to Friday (standard construction hours)
- 7am to 6pm Saturday (outside of hours work).

Additional extended working hours will be required during certain stages of the proposal construction including nightworks and works on Sundays. This would enable full bridge closures while minimising traffic impacts for the community. Duration respite will be utilised to undertake extended periods of nightworks to minimise bridge closures and work duration.

The proposed works would commence in late-2024 and would be completed a period of about three and a half years (not considering delays due to extreme weather and unforeseen issues). Works would be completed in four key stakes as summarised in Table 3-2.

### 3.3.4 Plant and equipment

The following construction equipment is likely to be required during construction of the proposal:

- Scaffolding
- Temporary jetty or pontoon
- Barges and work boats
- Winches and rigging equipment
- Hand tools including chainsaws and pneumatic air tools
- Elevating work platform (EWP) (possibly on a barge)
- Mobile bridge inspection units
- Cranes including Franna cranes etc.
- Manitou
- Forklift
- Compressors
- Generators
- Trucks
- Concrete pumps and trucks
- Seabed excavation equipment
- High pressure water blasting equipment
- Temporary platform and full containment (impermeable, fully sealed, airlock or resealable entryway, mechanical ventilation system and exhaust filtration)
- Air extraction unit and filtration system for containment
- Plastic sheeting and other materials for containment
- Waste extraction unit
- Paint and equipment container
- Variable message boards (VMS)
- Portable traffic signals and other traffic control devices
- Portable lights including daymakers
- Light vehicles including cars/utes
- Site sheds and containers (including fuel storage)
- Decontamination unit (including showers for workforce).

Other equipment may also be required. A workforce of approximately 10-20 may be on site at any given time.

### 3.3.5 Source and quantity of materials

As the proposal entails predominately rehabilitation works, material quantities would be relatively small.

Painting materials would be sourced by the contractor undertaking the work from reputable paint and paint equipment manufacturers. Blue metal dust or gravel (if required) for the site compound/stockpile area would be sourced locally from licensed bulk landscape suppliers or quarries where possible.

### 3.3.6 Traffic management and access

Traffic management issues for the proposal include:

- Management of construction vehicle traffic and activities

- Closure of the bridge to both vehicles and pedestrians
- Closure of River Street turning lanes at certain times to accommodate the work zone at the southern end of the bridge
- Interactions with traffic lights at the intersection of Wallace Street and Giinagay Way for changed traffic conditions
- Loss of parking to accommodate traffic signage
- Provided motorists with early warning of closures/changed traffic conditions
- Limited clearance below the bridge for the scaffolding
- Impacts to maritime traffic during works.

Traffic would be managed according to the Traffic control at work sites (TCAWS) Technical Manual Version 6 (Transport 2022). A site-specific Traffic Management Plan (TMP) would be prepared detailing the specifics of the site and its inherent hazards and constraints. Work would not begin until the TMP is approved and strategies to manage traffic within and around the work site are in place. Consultation and liaison with local road users would be required with respect to road and maritime closures, appropriate detours and timing considerations. The alternative route during road closures for the proposal would be via the Pacific Highway to the north and south. Full details of proposed traffic management measures are provided in Section 6.4.

## 3.4 Ancillary facilities

A site compound would be established on the northern side of the bridge (see Figure 3-1). Two potential locations have been identified (see Figure 3-6). Either one or both of these compounds may be utilised at different times in the project. No complete removal of mature vegetation is required at either site however trimming of vegetation will be completed within and around the compounds to provide access. Some overhanging vegetation (e.g. dead limbs) may need to be trimmed where it is within five metres of the compound and bridge to maintain public and worker safety. Regrowth vegetation and weeds will be removed if required.

A temporary jetty/pontoon, barges, and boats would also be required at this location to facilitate the works. The temporary jetty/ pontoon would be installed to provide access to the piers via a boat or barge. Floating/ hanging scaffold will be erected in stages around the bridge as the works progress.

The site compound would comprise:

- Storage of materials
- Parking for vehicles and equipment
- Staff facilities such as office, toilets, lunchroom
- Decontamination facilities for workers and equipment
- Storage facilities for waste
- Storage/operation of plant and equipment

Figure 3-6: Compounds: west (L) and east (R) of Giinagay Way on the northern side of the bridge

# 4. Statutory and planning framework

This chapter provides the statutory and planning framework for the proposal and considers the provisions of relevant state environmental planning policies, local environmental plans and other legislation.

## 4.1 Environmental Planning and Assessment Act 1979

### 4.1.1 State Environmental Planning Policies

**State Environmental Planning Policy (Transport and Infrastructure) 2021**

State Environmental Planning Policy (Transport and Infrastructure) 2021 (SEPP (Transport and Infrastructure)) aims to facilitate the effective delivery of infrastructure across the State.

Section 2.108 of SEPP (Transport and Infrastructure) permits development on any land for the purpose of a road or road infrastructure facilities to be carried out by or on behalf of a public authority without consent.

As the proposal is for road infrastructure facilities and is to be carried out by Transport, it can be assessed under Division 5.1 of the EP&A Act. Development consent from council is not required.

The proposal is not located on land reserved under the *National Parks and Wildlife Act 1974* and does not require development consent or approval under:

- State Environmental Planning Policy (Resilience and Hazards) 2021
- State Environmental Planning Policy (Planning Systems) 2021
- State Environmental Planning Policy (Precincts – Central River City)
- State Environmental Planning Policy (Precincts – Eastern Harbour City)
- State Environmental Planning Policy (Precincts – Regional) 2021
- State Environmental Planning Policy (Precincts – Western Parkland City) 2021.

Section 2.10 to 2.15 of SEPP (Transport and Infrastructure) contains provisions for public authorities to consult with local councils and other public authorities prior to the commencement of certain types of development. Consultation, including consultation as required by SEPP (Transport and Infrastructure), is discussed in chapter 5 of this REF.

**Other SEPPs**

State Environmental Planning Policy (Resilience and Hazards) 2021

State Environmental Planning Policy (Resilience and Hazards) 2021 (SEPP (Resilience and Hazards)) came into effect on 1 March 2022. Chapter 2 of the SEPP (Resilience and Hazards) aims to promote an integrated and coordinated approach to land use planning in the coastal zone in a manner consistent with the objectives of the *Coastal Management Act 2016*.

The coastal zone is comprised of four coastal management areas:

- Coastal Wetlands and Littoral Rainforest Area
- Coastal Vulnerability Area
- Coastal Environment Area
- Coastal Use Area.

The proposal is not located with coastal wetland mapping or the coastal proximity area mapping for coastal wetlands identified under the SEPP (Resilience and Hazards).

The proposal is not identified as a development covered by Chapter 3 (Hazardous and offensive development) of the SEPP (Resilience and Hazards). Chapter 4 (Remediation of Land) required consent authorities to consider whether the site is or is likely to be contaminated and determine categories or remediation requiring consent. Consent is not required as the works may be carried out without consent under the SEPP (Transport

and Infrastructure). However, Section 6.3 contains an assessment of the of the likelihood of contamination within the proposal site.

State Environmental Planning Policy (Planning Systems) 2021

State Environmental Planning Policy (Planning Systems) 2021 (SEPP (Planning Systems)) came into effect 1 March 2022.

Chapter 2 of SEPP (Planning Systems) defines development that is State significant development (SSD), State significant infrastructure (SSI), critical SSI (CSSI) or regionally significant development (RSD).

As infrastructure development, SSD and RSD do not apply to the proposal.

The proposal does not meet the definition of SSI or CSSI under the SEPP (Planning Systems) and does not require approval under Division 5.2 of the EP&A Act.

### 4.1.2 Local Environmental Plans

**Nambucca Local Environmental Plan 2010**

The proposal is located with the Nambucca Valley local government area (LGA) to which the Nambucca Local Environmental Plan 2010 (Nambucca LEP) applies. The proposal is located primarily on land zoned W2 Recreational Waterways, with adjacent areas zoned SP2 Classified Road (Infrastructure), RE1 Public Recreation and E2 Commercial Centre (see Figure 4-1). Road works are permitted with consent in the SP2, RE1 and E2 zones. However, as development consent is not required for the proposal under the provisions of SEPP (Transport and Infrastructure), the consent provisions of the Nambucca LEP do not apply.

The objectives of these land use zones and the proposal's compliance is summarised in Table 4-1.

Table 4-1: Land use zone objectives

| Zone | Objectives | Proposal compliance |
|---|---|---|
| W2 | • To protect the ecological, scenic and recreation values of recreational waterways<br>• To allow for water-based recreation and related uses<br>• To provide for sustainable fishing industries and recreational fishing | Safeguards and management measures are included in the REF to protect the ecological, scenic and recreational values of the Nambucca River.<br>Access to the waterway may be restricted during construction but all access would be restored on completion. Alternative access arrangements would be made wherever possible. |
| SP2 | • To provide for infrastructure and related uses<br>• To prevent development that is not compatible with or that may detract from the provision of infrastructure | The proposal aims to restore and maintain transport infrastructure. |
| RE1 | • To enable land to be used for public open space or recreational purposes<br>• To provide a range of recreational settings and activities and compatible land uses<br>• To protect and enhance the natural environment for recreational purposes<br>• To identify proposed or existing publicly owned land that is used or is capable of being used for the purpose of active or passive recreation | The proposed compound would impact on open space within Lions Park. Impacts would be minimised as far as practicable. The park would be restored to its pre-existing condition and access returned on completion of works. No long term changes are proposed. |
| E2 | • To strengthen the role of the commercial centre as the centre of business, retail, community and cultural activity<br>• To encourage investment in commercial development that generates employment opportunities and economic growth | The proposal would rehabilitate and improve the longevity of the Macksville Bridge, which is the key link from North Macksville to the commercial centre. As such, it is critical for the success of the commercial centre of Macksville.<br>Access and other impacts that could affect commercial operations in the town |

| Zone | Objectives | Proposal compliance |
|---|---|---|
| | • To encourage development that has a high level of accessibility and amenity, particularly for pedestrians<br>• To enable residential development only if it is consistent with the council's strategic planning for residential development in the area<br>• To ensure that new development provides diverse and active street frontages to attract pedestrian traffic and to contribute to vibrant, diverse and functional streets and public spaces | centre, including tourism, would be reduced as far as practicable in consultation with council and the community. |

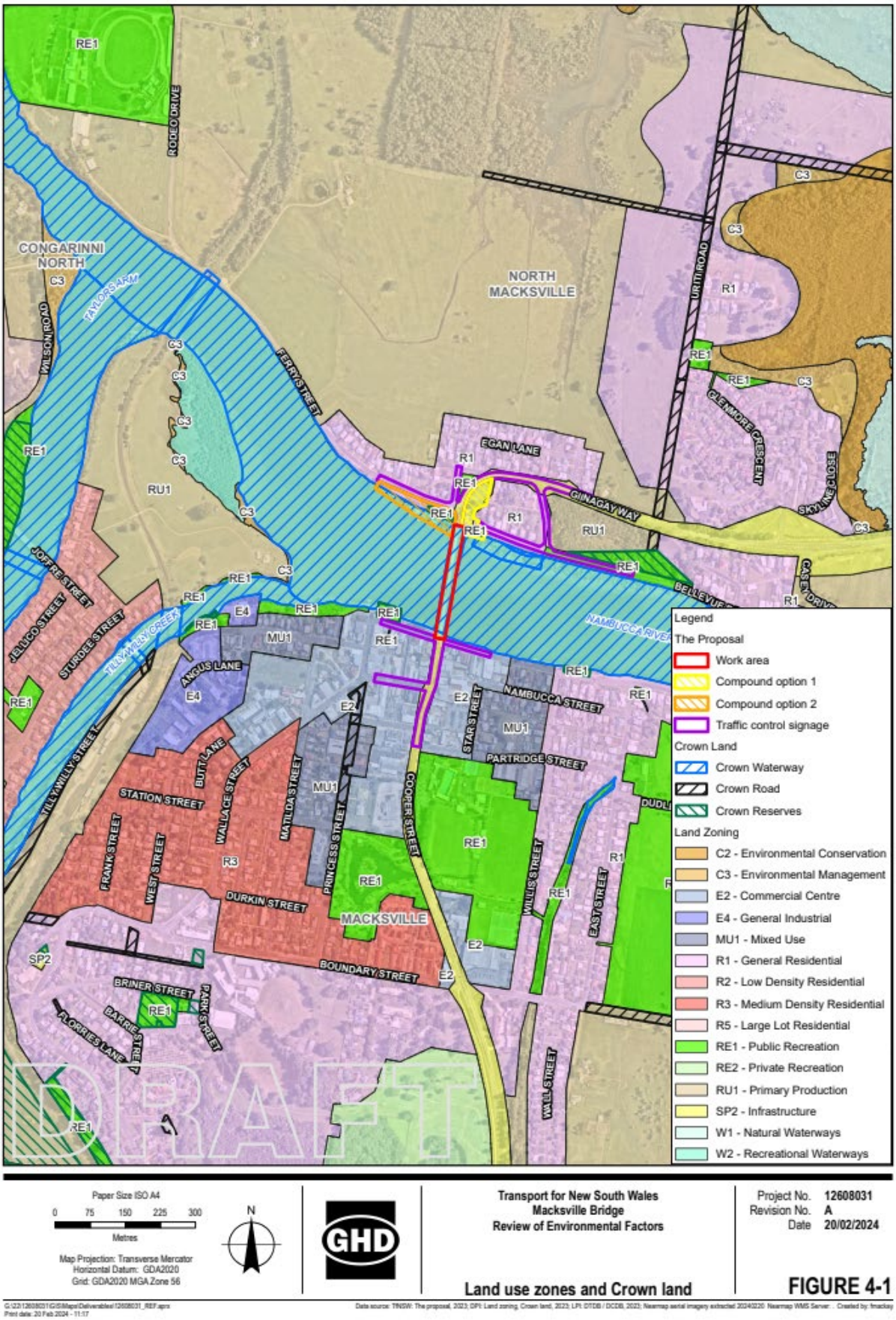



Figure 4-1: Land use zones

## 4.2 Other relevant NSW legislation

### 4.2.1 Roads Act 1993

Section 138 of the *Roads Act 1993* (Roads Act) requires consent from the relevant road authority for the carrying out of work in, on or over a public road. However, clause 5(1) in Schedule 2 of the Roads Act states that public authorities do not require approval for works on unclassified roads.

The proposal would involve work on the Macksville Bridge (Cooper Street), which is a classified road under the Roads Act. A road occupancy license may be required under section 138 of the Roads Act in order to perform works for the proposal. Where works are required that would impact on local roads, ongoing consultation with council would occur, as required.

### 4.2.2 Crown Lands Management Act 2016

The *Crown Lands Management Act 2016* (Crown Lands Act). The Crown Lands Act is intended to ensure that Crown land is managed for the benefit of the people of NSW and to provide for the proper assessment and management of Crown land in accordance with the principles of the Crown Lands Act. The Crown Lands Act sets out the conditions under which Crown land is permitted to be occupied, used, sold, leased, licensed or otherwise dealt with.

Transport would undertake the works in accordance with section 158 and 175 of the Roads Act. Notification would be provided to Crown Land prior to the commencement of the proposal.

### 4.2.3 Aboriginal Land Rights Act 1983

The *Aboriginal Land Rights Act 1983* (ALR Act) provides for land rights for Aboriginal persons and establishes representative Aboriginal Land Councils in NSW. Crown Land that is not lawfully being used or occupied, not (likely) to be needed for residential or essential public purposes and not the subject of a registered native title claim or determination can be claimed under the ALR Act.

### 4.2.4 Biodiversity Conservation Act 2016

The *Biodiversity Conservation Act 2016* (BC Act) set out the environmental impact assessment framework for threatened species, threatened ecological communities and areas of outstanding biodiversity value (formerly critical habitat) for Division 5.1 activities (amongst other types of development).

Part 7 of the BC Act requires that the significance of the impact on threatened species, populations and endangered ecological communities listed under the BC Act is assessed using a five-part test. Where a significant impact is likely to occur, a species impact statement (SIS) or biodiversity development assessment report (BDAR) must be prepared in accordance with the Director-General's requirements.

The potential impacts of the proposal to biodiversity is addressed in Section 6.1.

### 4.2.5 Biosecurity Act 2015

The *Biosecurity Act 2015* (Biosecurity Act) provides a framework to manage biosecurity risks from animal and plant pests and diseases, weeds and contaminants outlines the responsibilities of government, councils, private landholders and public authorities in the management of biosecurity matters. Under section 21 of the Biosecurity Act, 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 as is reasonably practicable.

The Biosecurity Act and Regulations provide specific legal requirements for high-risk activities and State level priority weeds. Priority weeds encountered on the site would need to be controlled to fulfil the general biosecurity duty under the Biosecurity Act. This is further discussed in Section 6.1.

### 4.2.6 National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act 1974* (NP&W Act) governs the establishment, preservation and management of national parks, state reserves, historic sites and certain other areas, and the protection of certain fauna, native plants and Aboriginal heritage.

The nearest protected area to the proposal is the Nambucca Aboriginal Area, which is located about five kilometres to the northeast. There is no reserved land under the NPW Act within or immediately adjacent to the proposal area.

The harming or desecrating of Aboriginal objects or places is an offence under section 86 of the NP&W Act. Under section 90 an Aboriginal heritage impact permit (AHIP) may be issued in relation to a specified Aboriginal object, Aboriginal place, land, activity or person or specified types or classes of Aboriginal objects, Aboriginal places, land activities or persons. Potential impacts to Aboriginal heritage as a result of the proposal are discussed in Section 6.6.

### 4.2.7 Heritage Act 1977

The *Heritage Act 1977* (Heritage Act) provides for the conservation of buildings, works, archaeological items, relics and places of heritage value. It principally achieves this by listing, and therefore protecting, heritage values under a number of registers. This includes the State Heritage Register (SHR), the Heritage and Conservation Register (HCR), LEP heritage schedules, public authority heritage and conservation registers (termed section 170 registers), and interim Heritage Orders (IHOs).

The Heritage Act sets out provisions that require the assessment of impacts on any values that are protected under the Heritage Act and the process, to investigate, excavate and/or impact on a heritage-listed item.

The Macksville Bridge is listed as SHI No. 4311596 Nambucca River Bridge under the Section 170 Heritage and Conservation Register and is assessed as being of local significance. Potential impacts due to the proposal are discussed in Section 6.7.

### 4.2.8 Contaminated Lands Management Act 1997

The *Contaminated Lands Management Act 1997* (CLM Act) establishes a process for investigation and remediating land where required. The CLM Act allows the NSW Environmental Protection Authority (EPA) to declare land as significantly contaminated land. The EPA may order a public authority to carry out actions or prepare a plan of management for significantly contaminated land. The CLM Act imposes a duty on landowners to notify the EPA and potentially investigate and remediate land contamination if levels are above EPA guidelines.

A search of the EPA contaminated land record of notices did not identify any contaminated sites within proximity to the proposal site. Site contamination is further addressed in Section 6.3.

### 4.2.9 Fisheries Management Act 1994

The *Fisheries Management Act 1994* (FM Act) applies to all water in NSW and aims to conserve, develop and share the fisheries resources of the State for the benefit of current and future generations.

The FM Act requires consideration of proposed impacts for works, including dredging or reclamation, and works that block fish passage or harm marine vegetation. Pursuant to section 199 of the FM Act, Transport must give the Minister written notice of the proposed work before carrying out or authorising such works. Transport must consider any matters raised by the Minister within 28 days after the giving of the notice (or such other period as is agreed between the Minister and Transport).

Potential impacts to aquatic ecology, including threatened species and key fish habitat mapped under the FM Act, is further discussed in Section 6.1.

### 4.2.10 Water Management Act 2000

The Water Management Act 2000 (WM Act) is intended to ensure that water resources are conserved and properly managed for sustainable use benefitting both present and future generations. It is also intended to provide formal means for the protection and enhancement of the environmental qualities of waterways and their in-stream uses as well as to provide for protection of catchment conditions.

The proposal is subject to the Water Sharing Plan (WSP) for the Nambucca Unregulated and Alluvial Water Sources 2016. Use of and access to surface water is undertaken in accordance with the WSP. Extraction of water is not anticipated to be required for the proposal.

### 4.2.11 Protection of the Environment Operations Act 1997

The *Protection of the Environment Operations Act 1997* (POEO Act) provides the legal framework for the management of air, noise, water and waste pollution. There are no Protection of the Environment Policies (PEPs) made under the POEO Act that are relevant to the proposal. An environmental protection license (EPL) is required for activities scheduled under the POEO Act.

The proposal does not meet the definition of a scheduled activity and an EPL is not required. Transport and/or contractors working on behalf of Transport are required to notify the EPA when a 'pollution incident' occurs that is likely to impact upon the environment.

## 4.3 Commonwealth legislation

### 4.3.1 Environment Protection and Biodiversity Conservation Act 1999

Under the EPBC Act, a referral is required to the Australian Government for proposed actions that have the potential to significantly impact on matters of national environmental significance or the environment of Commonwealth land. These are considered in Appendix A and chapter 6 of the REF.

A referral is not required for proposed road activities that may affect nationally-listed threatened species, endangered ecological communities and migratory species. This is because requirements for considering impacts to these biodiversity matters are the subject of a strategic assessment approval granted under the EPBC Act by the Australian Government in September 2015.

Potential impacts to these biodiversity matters are also considered as part of chapter 6 of the REF and Appendix A.

**Findings - matters of national environmental significance**

The assessment of the proposal's impact, on matters of national environmental significance and the environment of Commonwealth land, found that there is unlikely to be a significant impact on relevant matters of national environmental significance or on Commonwealth land. Accordingly, the proposal has not been referred to the Australian Government Department of Climate Change, Energy, the Environment and Water under the EPBC Act.

### 4.3.2 Native Title Act 1993

The *Native Title Act 1993* (NT Act) recognises and protects native title. The NT Act covers actions affecting native title and the processes for determining whether native title exists and compensation for actions affective native title. It establishes the Native Title Registrar, the National Native Title Tribunal, the Register of Native Title Claims and the Register of Indigenous Land Use Agreements, and the National Native Title Register. Under the Act, a future act includes proposed public infrastructure on land or waters that affects native title rights or interest.

A search of the Native Title Tribunal Native Title Vision website was undertaken on 1 May 2023, with no Native Title holders/claimants identified in the study area of the proposal. The closest Native Title claim NCD2014/001 of the Gumbaynggirr People is located approximately six kilometres to the east in the Gaagal Wanggan National Park.

## 4.4 Confirmation of statutory position

The proposal is categorised as development for the purpose of a road and is being carried out by or on behalf of a public authority. Under section 2.108 of SEPP (Transport and Infrastructure) the proposal is permissible without consent. The proposal is not State significant infrastructure or State significant development. The proposal can be assessed under Division 5.1 of the EP&A Act.

Transport for NSW is the determining authority for the proposal. This REF fulfils Transport's obligation under section 5.5 of the EP&A Act including 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.

# 5. Consultation

This chapter discusses the consultation undertaken to date for the proposal and the consultation proposed for the future.

## 5.1 Consultation strategy

A project-specific Communication Plan has been developed, identifying stakeholders and the methods to keep them informed. This plan covers all stages of the proposed work, including development and delivery. The key elements of this Communications Plan are outlined in this section. Ongoing consultation would be carried out by Transport in accordance with the Transport for NSW's Community Involvement Practice Notes and Resource Manual.

## 5.2 Community involvement

Consultation with the local community has been undertaken through an initial briefing meeting with Council on 2 May 2023 and subsequent ongoing communications. In regard to direct consultation with local community members Transport has undertaken the following:

- Established a Project Website with project information: https://www.transport.nsw.gov.au/projects/current-projects/macksville-bridge
- Published a Project Notification: Distributed to 1,970 properties in Macksville from 14 August 2023
- Facebook social media posts as a means to distribute the Project Notification flyer
- Project Early Consultation Survey – published externally
  - Undertook a community survey about the project to understand community questions and issue related to the works
  - The survey was published on the 14 August 2023 and was available for a period of two weeks
  - 379 responses were received.
- Community drop-in sessions were held between 11am–1pm and 4pm–6pm on 24 August at the CWA Hall, 31 Princess Street, Macksville
- An early consultation report with a summary of the feedback provided was published on the project website in December 2023.

Table 5-1 contains a summary of the main matters raised as a result of this consultation and where these matters are addressed in the REF.

Table 5-1: Summary of issues raised by the community

| Group | Issue raised | Response / where addressed in REF |
|---|---|---|
| Community | • Active transport impacts across the bridge:<br>  ○ Access to shops, services and recreation<br>  ○ Access to places of work | Section 6.4 |
| | • Active transport impacts east-west along each foreshore | Section 6.4 |
| | • Active transport delays and increased travel time. | Section 6.4 |
| | • Recreational boat users impacts along the river | Section 6.4 |

| Group | Issue raised | Response / where addressed in REF |
|---|---|---|
| | • Recreational fishers in and around the bridge being impacted | Noted |
| | • Need for additional maintenance on the bridge approached, particularly the southern side | Out of scope. |
| | • Need to maintain access for emergency services and to be able to access the Nambucca Hospital | Section 6.4 |
| | • Then need for the staging of the works and traffic impacts to be clearly communicated to the community | Section 3.3.1 |
| | • The proposal should allow for improvement of lighting on the bridge | Section 3.3 and 6.8 |
| | • Concern about delays and increased travel times during construction due to detours | Section 6.4 |
| | • General consensus that the bridge needs to be repaired and upgraded as its visually run down | Section 2.0 and noted. |
| | • Minimising impact on parkland as a result of compound areas | Section 6.9 and 6.10 |
| | • Multiple submissions in support of the proposal | Noted. |

## 5.3 Nambucca Vally Council

Consultation meetings with Nambucca Valley Council occurred on the following dates

- Consultation meeting 2 May 2023 – attended by key Nambucca Shire Council staff including General Manager (not elected councillors)
- Consultation meeting 7 December 2023 – attended by General Manager, Manager Technical Services and Manager Infrastructure Services.

Table 5-2 contains a summary of the main matters raised as a result of this consultation with Nambucca Valley Council.

Table 5-2: Summary of issues raised by Council

| Group | Issue raised | Response / where addressed in REF |
|---|---|---|
| Council briefing – 2 May 2023 | What is the proposed timing and duration of the project? | Section 3.3 |
| | Will the project coordinate with Councils program of works to minimise cumulative impacts? | To be discussed with Council closer to delivery. |
| | Describe the process for community consultation. | Section 5 |
| | Opportunities for the engagement of local contractors | Section 7 |
| | | Section 6.4 |

| Group | Issue raised | Response / where addressed in REF |
|---|---|---|
| | Impacts to businesses in Macksville as a result of changed traffic and parking conditions during the works. | Section 6.4 |
| | Need to clearly define impacts on active transport users both over the bridge and east-west across each foreshore. | Section 6.8 |
| | Urban design impacts along the foreshore. | Section 6.8 |
| | Council installed lighting on the bridge installed at Councils expense. | Section 7.4 |
| | Emergency service access across the bridge during total or single lane closures. | Section 6.4 |
| Council briefing – 7 December 2023 | What is the proposed project staging? | Section 3.3.1 |
| | General questions regarding proposed changes to traffic arrangements, traffic lights and road closures. | Section 6.4 |
| | What are the proposed traffic management controls to be put in place to manage the changes traffic arrangements? | Section 6.4 |
| | Council asked Transport to confirm which pedestrian walkways would remain open during the works | Section 6.4 |
| | Will there be potential impacts from floodlights on residents? | Section 6.8 |
| | Council advised Transport that River Street Closes annually for ANZAC day activities. | Noted by Transport. |

## 5.4 Emergency services

Transport provided the Local Emergency Management Committee (LEMC) a project briefing on 21 Nov 2023. This committee includes representatives from local emergency services, health services, council and other government bodies.

Transport then undertook a consultation meeting with emergency services on 15 Dec 2023. In attendance were representatives from:

- NSW Police
- NSW Ambulance Service.

Not in attendance were representatives from Fire and Rescue NSW who were provided with a briefing pack by email for review and an offer to provide separate comments as required.

Table 5-3: Summary of issues raised by emergency services

| Group | Issues raised | Response / where addressed in REF |
|---|---|---|
| Emergency services consultation meeting 15th December 2023 – attended by NSW Police and NSW Ambulance. Fire and Rescue NSW invited | • Isolating community and increasing response times during full closures is a concern to Police.<br>• Concerns around emergency services needing to use a U-turn detour on the Pacific Highway as there is no alternative access between north and south | Section 6.4 |

| | | |
|---|---|---|
| | Macksville. This may result in further delays for response time if there is traffic on the Highway.<br>• During single lane bridge operation – it would be important to prioritise access for emergency services but apart from this minimal impact to services.<br>• Emergency services will require considerable notice of closures that would impact response time.<br>• The delay in getting an ambulance into town from the ambulance station will extended by approximately 20 minutes during full closures if emergency services cannot use the bridge – this will require additional community notice. | |

## 5.5 Business surveys

To inform the assessment of potential impacts to local businesses within Macksville as a result of the proposal, business surveys were undertaken in December 2023. The purpose of the survey was to further understand the businesses in the vicinity of the Macksville Bridge and the potential impacts that may be experienced, particularly during construction of the proposal.

The survey was distributed on 7 December 2023, to businesses and responses were collected on 15 December 2023.

By the end of the survey period, the following types of businesses responded to the survey:

- 15 retail businesses
- Seven health / beauty
- Four service providers
- Four cafes / restaurants
- One accommodation provider.

These businesses have a range of opening hours, days, delivery times and peak operating times. Most businesses receive deliveries during the week from Monday to Friday via van / truck or courier. The proportion of respondents who indicated that they receive daily deliveries was 21.9 per cent (7 respondents).

All businesses who responded to the survey noted that their employees drive to work, and park either on the street in Macksville town centre or in dedicated parking areas. Of the survey respondents, two businesses noted that some employees park in the car park on the northern side of the Macksville Bridge then walk to the town centre to access their place of work.

Businesses who responded to the survey indicated staff numbers between two and 50 employees, with 40.6% of businesses having between five and 20 employees.

The result of the business surveys are analysed further in the assessment of socio-economic impacts of the proposal in Section 6.10 with full details included in the Socio-Economic Impact Assessment attached in Appendix H.

## 5.6 Aboriginal community involvement

Transport undertook a Stage 1 assessment in accordance with the Procedure for Aboriginal Cultural Heritage Consultation and Investigation (PACHCI). Transport's Aboriginal Cultural Heritage Officer advised that the proposal was unlikely to have an impact on Aboriginal cultural heritage. Details of the Stage 1 PACHI Assessment are outlined in Section 6.6 and the Stage 1 Assessment is attached at Appendix F.

## 5.7 SEPP (Transport and Infrastructure) consultation

A review of Division 1 of the Transport and Infrastructure SEPP identified that consultation should be undertaken with the following agencies:

- Nambucca Shire Council, pursuant to clause 2.20 for potential impacts on Council infrastructure
- NSW Maritime, pursuant to clause 2.15 for potential impacts to navigable waters.
- NSW Fisheries, regarding noticed to undertake dredging or reclamation works.

Issues raised from this consultation are outlined in Table 5 4 below. Copies of consultation letters are attached at Appendix I.

Table 5-4: Issues raised through SEPP (Transport and Infrastructure) consultation

| Group | Issue raised | Response / where addressed in REF |
|---|---|---|
| Nambucca Shire Council | No response received in relation to the T&I SEPP consultation letter. | Despite no response being received in relation to the T&I SEPP letter Transport has undertaken extensive consultation with Council as detailed in Section 5.2. Councils feedback has influenced the projects planning and traffic management recommendations. |
| NSW Maritime | No response received. | NA |
| NSW Fisheries | Response letter received on 20 February 2024. Fisheries raised no objection to the proposed works but made recommendations regarding management measures to be implemented to minimise impacts to the aquatic environment. | Section 7.2 |

## 5.8 Ongoing or future consultation

A range of ongoing consultation and community engagement is proposed to be undertaken following the preparation of this REF. The project-specific Communication Plan identifies currently planned activities and stakeholders who will be involved. Future consultation will evolve pending on feedback from stakeholders from preceding consultation activities and feedback received to ensure matters raised are appropriately addressed.

Future planned consultation activities include:

- Public display of the REF and preparation of a submissions report
- Publication of submissions report on the Transport for NSW website
- Ongoing direct engagement with Council
- Ongoing direct engagement with property owners (residential and businesses) who may be directly impacted by the works
- Ongoing direct engagement with the transport industry including truck and bus operators
- Consultation with emergency services
- Ongoing community updates including details of potential impact to traffic in print/digital media and social media, website updates, media releases and traffic alerts.

Targeted consultation to keep all stakeholders up to date on the work and any changes to the program would continue for the duration of the project. A contact number for inquiries and complaints would be provided.

# 6. Environmental assessment

This section of the REF provides a detailed description of the potential environmental impacts associated with the construction and operation of the proposal. All aspects of the environment, potentially impacted upon by the proposal, are considered. This includes consideration of:

- Potential impacts on matters of national environmental significance under the EPBC Act.
- The factors specified in the Guideline for Division 5.1 assessments (DPE 2022) and as required under section 171 of the Environmental Planning and Assessment Regulation 2021 and the Roads and Related Facilities EIS Guideline (DUAP 1996). The factors specified in section 171 of the EP&A Regulation are also considered in Appendix A.
- Site-specific safeguards and management measures are provided to mitigate the identified potential impacts.

## 6.1 Biodiversity

This section addresses the biodiversity impacts associated with the proposal and details the safeguards and management measures proposed to mitigate these impacts.

### 6.1.1 Methodology

The methodology for the terrestrial and aquatic flora and fauna assessment involved a desktop database assessment as well as a site-specific microbat site survey and habitat assessment as described below. A copy of the Microbat Survey and Habitat Assessment Report (GeoLINK, 2023) is attached at Appendix C.

**Desktop assessment methodology**

A desktop biodiversity assessment was carried out and included a review of relevant and publicly available literature and background information to identify threatened and migratory species, endangered populations and threatened ecological communities (TECs) (or their habitats) that had previously been recorded within, or near to, the proposal area. The following searches were conducted:

- Atlas of NSW Wildlife Database within a 10 kilometre radius of the proposal
- BioNet Vegetation Classification Database, May 2023
- DCCEEW Protected Matters Search Tool (PMST) for known/predicted EPBC Act TECs within a 10 kilometre radius of the proposal
- The federal Bureau of Meteorology's Atlas of Groundwater Dependent Ecosystems (GDE)
- DPI Fisheries Spatial Data
- DCCEEW National Flying-fox monitoring viewer
- State Environmental Planning Policy (SEPP) Resilience and Hazards 2021 Chapter 2 (Coastal Management) coastal area mapping.

The results of these searches as described in 6.1.2 and copies of database search results are attached in Appendix C.

**Microbat survey and assessment methodology**

The methodology for the survey and assessment of Microbats within the study area is as follows:

- Pre-survey review of BioNet microbat records at or proximate to the bridge.
- Diurnal inspection of the entire underside of the bridge from a canoe and exposed creek banks with the aid of spotlights, binoculars and a digital camera with zoom lens.
- Fly-out survey at dusk with one thermal imagery camera (HIKMICRO G40) from the northern bank from 4:50pm to 5:50pm. The main focus of the fly-out survey was a drainage scupper in the third span from the north, which during the diurnal inspection was identified as either being blocked or possibly containing a roosting microbat.

- Passive ultrasonic recorder (Titley Chorus) survey during fly-out, with one device located on the northern bank and one device located on the southern bank (refer to Plate 2.1 and Plate 2.2).
- Post-survey review of photographs taken during diurnal inspections and video footage recorded from the thermal imagery camera.
- Post-survey analysis of microbat call recordings using Anabat Insight software and subsequent reporting of results.

### 6.1.2 Existing environment

*Plant community Types*

One Plant community type (PCT) was identified within proximity to the footprint of the proposal:

- PCT 4091: Grey Mangrove – River Mangrove forest. This PCT is not listed as a threatened ecological community, Appendix C – Biodiversity searches and microbat

*OEH BioNet search*

Searches of the OEH BioNet Atlas of NSW Wildlife completed on the 15 May 2023 returned records of 54 threatened flora and 272 threatened fauna species within the search area (10km x 10km area). A potential occurrences assessment of these species is provided in Appendix C.

*EPBC protected matters search*

The protected matters search tool (PMST) completed on 12 May 2023, Appendix C identified 90 threatened species (18 flora and 82 fauna species) listed under the EPBC Act as species that are likely to occur or may occur within the search area, or have habitat that is likely to or may occur within the search area.

64 migratory species listed under the EPBC Act were identified within the search area by the PMST. The site does not comprise Australian Government Department of the Environment and Energy (DoEE) defined important habitat for any of these species and therefore EPBC Act listed migratory species are not considered a constraint for the proposal.

6 threatened ecological communities listed under the EPBC Act are identified within the search area: Coastal Swamp Oak Forest of New South Wales and South East Queensland ecological community, Littoral Rainforest and Coastal Vine Thickets of Eastern Australia, Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland, Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions and Lowland Rainforest of Subtropical Australia.

*Critical habitat key habitats and wildlife corridors*

A search of the register of critical habitat completed on 12 May 2023 indicated that the site does not contain or adjoin any areas of listed critical habitat. A site inspection confirmed that with the only works not on the bridge being contained on maintained lawn there is no critical habitat, key habitats or wildlife corridors in the proposal area.

*Microbats*

Microbat survey and habitat assessments results indicated that the majority of Macksville Bridge does not provide suitable roosting habitat for microbats. Approximately ten scuppers provide moderate-quality potential roosting habitat and roughened surfaces on the bridge provide low-quality, exposed opportunistic roosting habitat. No microbats or evidence of microbats were observed during a complete diurnal inspection of the bridge and no microbats were observed during the fly-out survey.

Microbat calls, most of which were likely Southern Myotis, were recorded from passive detectors setup on the northern and southern banks during the fly-out survey. Based on the results of bridge inspection, these calls were likely to made by foraging microbats flying near the detectors and not from bats leaving a roost in the bridge.

*Fish and Fish Habitat*

A review of the Department of Primary Industries fisheries NSW Spatial Data on 16 May 2023 identified the Nambucca River as part of the key fish habitat for the Northern Rivers area, with the freshwater fish community listed as good. However no threatened freshwater fish species were recorded.

*Aquaculture*

The proposal is located approximately 2.4 to the west of a priority oyster aquaculture area and subsequently an aquaculture lease area.

*Coastal Habitat*

Mangroves are located adjacent to each side of the Macksville Bridge, approximately 10m to the western side of the bridge and approximately 3 m to the eastern side of the bridge. A coastal wetlands proximity area is located approximately 52 m to the east of the bridge, with the coastal wetland approximately 152 m to the east. Proposed traffic control measure pass through the proximity area.

*Groundwater Dependent Ecosystems*

A review of the Bureau of Meteorology's groundwater dependent ecosystems (GDE) atlas on the 16 May 2023 identified the proposal is within a groundwater management system and the following groundwater and inflow dependent ecosystems were identified in the study area.

- Aquatic groundwater dependent ecosystem (Nambucca River)/Inflow dependent ecosystem
- Terrestrial GDE located approximately 180m to the east of the proposal/Inflow dependent ecosystem.

*Biosecurity risk – weeds*

The desktop review of the Department of Primary Industries' (DPI) NSW WeedWise identified a number of priority weeds for the North Coast region which includes the local government area of Nambucca, these are outlined in Appendix C.

It is anticipated that the presence of weeds would be minimal due to the nature of the proposal site i.e. the Macksville bridge and well maintained parkland at each end of the bridge. The focus would be to limit the potential for the spread of weeds through equipment and personnel movements in or out of the proposal site.

### 6.1.3 Potential impacts

**Construction**

For the works to proceed the following impacts on biodiversity may be incurred:

- Mangroves are located within both compound options 1 and 2. It has been assumed that no mangroves would be removed or impacted during the construction works. If mangroves are needed to be disturbed this will require additional approval and controls to be in place if maintenance works are beyond those permissible under the existing exemptions/ permits to harm held by Transport.
- Minor ground disturbance of previously disturbed areas of maintained turf lawns in the passive recreation areas to the north and south of the bridge. These areas have negligible biodiversity value. These ground disturbance impacts are assessed, and appropriate mitigations recommended in the assessment of soils impacts in Section 6.3.
- Some minor trimming of vegetation within the compound sites may be required for access. Trimming branches overhanging the compound and publicly accessible areas may be required for safety.
- Potential for pollution of aquatic environments within the Nambucca River, these impacts are covered in the Section 6.2 hydrology and flooding including surface and ground waters.
- Short-term disturbance to locally occurring fauna that may frequent the proposal area, such as birdlife, noting there is no significant habitat in the proposal area.

As per OISAS, oyster production requires water quality that supports healthy oyster growth and results in a product that is safe to eat following harvest; OISAS accordingly provides water quality guidelines for oyster aquaculture areas. As described in Section 6.2 given the scope of works and the mitigation measures proposed, the risk to the Nambucca River water quality from the proposal is considered low. The risk to the Priority Oyster Leases is therefore considered low; that is the safeguards described in Section 6.2.3 are appropriate to and sufficient for the protection of water quality in the river, including at the Priority Oyster Aquaculture Areas.

**Operation**

Once operational, the bridge would not have any impacts to biodiversity that differ from current conditions.

**Conclusion on significance of impacts**

The proposal is not likely to significantly impact threatened species or ecological communities or their habitats, within the meaning of the *Biodiversity Conservation Act, 2016* or *Fisheries Management Act 1994* and therefore a *Species Impact Statement* or Biodiversity Development Assessment Report is / is not required.

The proposal is not likely to significantly impact threatened species, ecological communities or migratory species, within the meaning of the EPBC Act.

### 6.1.4 Safeguards and management measures

Biodiversity safeguards and management measures are detailed in Table 6-1.

Table 6-1: Biodiversity safeguards and management measures

| Impact | Environmental safeguards | Responsibility | Timing |
|---|---|---|---|
| Biodiversity | Mangroves are located within both compound options 1 and 2. It has been assumed that no mangroves would be removed or impacted during the construction works. If mangroves are needed to be disturbed this will require additional approval and controls to be in place. | Contractor | Detailed design / pre-construction/ Construction |
| Biodiversity | If unexpected threatened fauna or flora species are discovered, stop work immediately and follow Transport's Unexpected Threatened Species Find Procedure in Transports Biodiversity Guidelines 2011-Guide 1 (Pre-clearing process). | Contractor | During Construction |
| Biodiversity | All activities are to minimize disturbances to shallow water habitats under, and in the immediate vicinity of water based structures, including disturbance of seabed sediments and smothering habitats from propeller strike or excessive propeller wash. | Contractor | During Construction |
| Biodiversity | Measures to further avoid and minimise the construction footprint and native vegetation or habitat removal are to be investigated during detailed design and implemented where practicable and feasible. | Contractor | During Construction |

## 6.2 Hydrology, flooding and water quality

### 6.2.1 Existing environment

Macksville Bridge spans the Nambucca River on the North Coast of NSW. The Nambucca River rises on the Dorrigo Plateau, part of the Great Dividing Range, and flows generally east southeast to reach its mouth at Nambucca Heads. The estuary supports a range of mangrove, saltmarsh and seagrass communities and is a popular site for recreational fishing, boating and swimming. Commercial oyster farming and fishing also occur in the estuary.

The river catchment is approximately 1,300 square kilometres in area. Taylors Arm is a major tributary of the Nambucca River, converging just upstream of Macksville.

Water quality monitoring by the Department of Planning and Environment (DPE) reported 'good' water quality for the river in the most recent sampling period in the summer of 2018/19.

The proposal site is not within a flood planning area under the LEP.

### 6.2.2 Potential impacts

**Construction**

Potential impacts to water quality during construction of the proposal include:

- Erosion and sedimentation that may affect the Nambucca River due to disturbance of the river bank or bed. This may take the form of excavations (for example through use of a pressure washer)

around the base of piers to gain access for the works. This may result in increased silt loads in the river.

- Turbidity and sedimentation of local aquatic habitats and waterways during works in the waterway.
- Accidental pollution of local water quality from machinery and construction materials and spills into the waterway. This may include a variety of dispersible liquid materials that would be used including deck sealant, diesel, unleaded petrol, machinery oils and lubricants. The nature of these liquids and their ability to disperse away from the site means that they could have a negative impact on ground or surface water on or adjacent to the site, especially during rain. Controls would be put in place to avoid such accidental spills. During activities such as the drilling of concrete for the insertion of starter bars a small amount of drilled inert concrete material may enter the river as an unavoidable consequence. Where work is being undertaken on piers high pressure water blasting will also be required to clean the peris prior to work. This will result in small amount of marine growth material being wasted into the river.
- When concrete is being pumped into the formwork around the piers it will displace the river water that is located within the formwork. As this water id displaced it will enter the river. As the concrete raises the water level in the formwork it will be visually observed for 'cloudiness' at which point the remaining water will be pumped out and removed for site treatment to prevent this water entering the river. The concrete installed around the piers will have an anti washout additive incorporated into the mix to minimise any potential accidental release to the river.
- Paint flakes containing chromium may enter nearby waterways during their removal. Paint removal would be undertaken in accordance with *'AS 4361.1:2017 Guide to hazardous paint management – Part 1: Lead and other hazardous metallic ingredients in industrial applications'* The use of a negative pressure environment and encapsulation of these works mean the release of paint flakes to the river will be unlikely.
- In the unlikely event that contaminants (including trace amounts of heavy metals) associated with the dry abrasive blasting media escape containment they have potential to impact on water quality.

Hydrological impacts are unlikely as the flow of the Nambucca River would not be altered.

Major flood events such as the one per cent Annual Exceedance Probability (AEP) or greater have the potential to impact on the compound sites adjacent to bridge, and there is the potential for water entering the compound sites to become contaminated. This is likely to occur if waste, vehicles and machinery and any fuels stored at the compound sites are not removed from the compound site should flood waters breach the river bank. There is also the potential for impacts to worker safety during flood events.

It is very unlikely that groundwater would be impacted during the construction of the proposal.

**Operation**

It is not expected that operation of the proposal would have an adverse impact on hydrology, flooding and water quality. Water quality is likely to be improved with completed rehabilitation works as the potential for chromium based paint shedding into the river is removed.

### 6.2.3 Safeguards and management measures

Hydrology, flooding and water quality safeguards are detailed in Table 6-2.

Table 6-2: Hydrology, flooding and water quality safeguards and management measures

| Impact | Environmental safeguards | Responsibility | Timing |
|---|---|---|---|
| Water quality | A site-specific Erosion and Sediment Control Plan (ESCP) is to be prepared and implemented as part of the CEMP.<br>The plan is to identify detailed measures and controls to be applied to minimise erosion and sediment control risks including (where relevant) but not limited to: runoff, diversion and drainage points, scour protection; stabilising disturbed areas as soon as possible, fencing and staged implementation arrangements. | Contractor | Pre-construction |

| Impact | Environmental safeguards | Responsibility | Timing |
|---|---|---|---|
| | The plan is to also include arrangements for managing wet weather events, including monitoring of potential high-risk events (such as storms) and specific controls and follow-up measures to be applied in the event of wet weather.<br>Work is to only commence once all erosion and sediment controls have been established. The controls are to be maintained in place until the work is complete and all exposed erodible materials are stable. | | |
| Water quality | Erosion and sedimentation controls are to be checked and maintained on a regular basis (including clearing of sediment from behind barriers) and records kept and provided on request. | Contractor | During construction |
| Water quality | Works is to cease and all sediment control measures checked and repaired or re-installed (if required) if heavy rainfall is forecast. | Contractor | During construction |
| Water quality | Visual monitoring of local water quality (ie turbidity, hydrocarbon sills/ slicks) is to be undertake on a regular basis to identify any potential spills or deficient erosion and sediment controls. | Contractor | During construction |
| Water quality | Construction vessels (including barges) are only to be used at suitable tides when no less than 60 mm clearance is available between the underside of the vessel and the bed of the waterway. | Contractor | During construction |
| Flooding | An emergency response plan is to be prepared for flood events, which would include:<br>• Responsibility for monitoring flood threat/ flood warning information and how it is to be done<br>• Training for staff on evacuation<br>• Demonstrate that specific equipment for evacuation is readily available<br>• Detail where compound site equipment, waste, materials, site sheds etc are to be relocated prior to flood. | Contractor | Pre-construction |
| Water quality | Staff are to be made aware that the works involve the removal of chromium based paint and the impacts associated with the release of this hazardous waste to the environment. | Contractor | Pre-construction |
| Flooding | Weather conditions are to be monitored closely at all times. Check the BoM site at least daily for updates. In the event of potential flooding, remove all contaminated waste and dispersible material from flood prone areas. | Contractor | During construction |
| Water quality | A spill containment kit is to be available at all times. All personnel are to be made aware of the location of the kit and trained in its effective deployment. | Contractor | During construction |
| Water quality | The containment structure for paint removal is to be constructed to capture any potential release of paint containing chromium in accordance with the | Contractor | During construction |

| Impact | Environmental safeguards | Responsibility | Timing |
|---|---|---|---|
| | requirements of *AS 4361.1:2007 Guide to hazardous paint management – Part 1: Lead and other hazardous metallic ingredients in industrial applications*. | | |
| Water quality | The containment system is to be checked regularly and any breaches promptly repaired. | Contractor | During construction |
| Water quality | All waste captured from the cleaning and painting operation in the containment system is to be disposed of at a waste treatment facility licenced to receive chromium contaminated waste. | Contractor | During construction |
| Water quality | If a spill occurs Transport's *Environmental Incident Classification and Reporting Procedure* is to be followed and Transport's Contract Manager notified as soon as practicable. | Contractor | During construction |
| Water quality | Required fuels and other liquids are to be stored in self-bunded chemical storage containers. | Contractor | During construction |
| Water quality | Refuelling of plant and equipment is to occur in impervious bunded areas located a minimum of 50m from drainage lines or waterways or in double bunded areas when within 50 m of a waterway. | Contractor | During construction |
| Water quality | Refuelling of plant and equipment on barges is to occur within a double-bunded area. | Contractor | During construction |
| Water quality | Unnecessary storage of fuels, lubricants or other compounds onsite are to be avoided. | Contractor | During construction |
| Water quality | Cleaning of tools and equipment is to occur within a designated bunded wash-down bay. | Contractor | During construction |
| Water quality | Water utilised for cleaning of tools is to be minimised and obtained from the town water supply. | Contractor | During construction |
| Water quality | Potable water is to be used for wash down. | Contractor | During construction |

## 6.3 Soils

### 6.3.1 Existing environment

The proposal occurs on the alluvial levee plains of the Nambucca, Kalang and Bellingen Rivers and Warrell Creek on the Coastal Alluvial Plain (Eddie, 2000).

No records of contaminated land were identified on the NSW EPAs contaminated lands register in the study area; consequently the proposal is not expected to impact on known contaminated land.

The site transects a number of acid sulphate soil classes as follows:

- North bank – Class 4
- Nambucca River – Class 1
- South bank – Class 4.

### 6.3.2 Potential impacts

**Construction**

Potential impacts to soil during construction of the proposal include:

- Erosion of exposed soil during the construction process predominantly as a result of the establishment and use of the proposed compounds
- Potential land contamination from spills associated with deck sealant, diesel, unleaded petrol, machinery oils and lubricants
- Potential land contamination from spills associated with incorrect management of abrasive waster material from paint removal.

Whilst the bridge is located in an area mapped as acid sulphate soils, construction work of soils will be limited to some sediment movement at the base of the piers. These works are minor and fully submerged meaning no soils with the potential to generate acid will be exposed to oxygen and have the potential to generate acid.

**Operation**

It is not expected that operation of the proposal would have an impact on soils.

### 6.3.3 Safeguards and management measures

Soils safeguards are detailed in Table 6-3.

Table 6-3: Soils safeguards and management measures

| Impact | Environmental safeguards | Responsibility | Timing |
|---|---|---|---|
| Contamination | If contaminated areas are encountered during construction, appropriate control measures will be implemented to manage the immediate risks of contamination. All other works that may impact on the contaminated area will cease until the nature and extent of the contamination has been confirmed and any necessary site-specific controls or further actions identified in consultation with the Transport Senior Manager Environment and Sustainability and/or EPA. | Contractor | Pre-construction |
| Contamination | A site-specific emergency spill plan will be developed as part of the CEMP and include spill-management measures in accordance with the Transport Code of Practice for Water Management (RTA, 1999) and relevant EPA guidelines. The plan will address measures to be implemented in the event of a spill, including initial response and containment, notification of emergency services and relevant authorities (including Transport and EPA officers). | Contractor | Pre-construction |
| Erosion and sedimentation | A site-specific ESCP is to be prepared and implemented as part of the CEMP.<br>Erosion and sediment control measures are to be implemented and maintained to:<br>• Prevent sediment moving off-site and sediment laden water entering any water course, drainage lines, or drain inlets<br>• Reduce water velocity and capture sediment on site<br>• Minimise the amount of material transported from site to surrounding pavement surfaces<br>• Divert clean water around the site (in accordance with the Blue Book). | Contractor | Pre-construction |

## 6.4 Traffic and transport

### 6.4.1 Methodology

The methodology for the traffic and transport assessment has been undertaken via the following process:

- Review of the existing traffic and transport conditions.
- Review of relevant government policy, guidelines and strategies.
- Review of current and future performance of roads and intersections associated with the proposal.
  - The intersection of Giinagay Way Road and Bellevue Drive (Priority)
  - The intersection of Giinagay Way Road and Ferry Drive (Priority)
  - The intersection of Giinagay Way Road and River Street (Priority)
  - The intersection of Giinagay Way Road and Wallace Street (Signals)
  - The intersection of Giinagay Way Road and Winifred Street (Priority)
  - The intersection of Giinagay Way Road and Partridge Street (Signals).
- The traffic counts were undertaken in 15-minute intervals for the following times to coincide with peak periods of activity at the above-listed intersections:
  - 7:00am–10:00am
  - 3:00pm–6:00pm.
- Additionally, traffic intersection queue length surveys were obtained on 21 Jun 2023 at the following intersections between 3:00 and 4:00pm:
  - The intersection of Giinagay Way Road and Bellevue Drive (Priority)
  - The intersection of Giinagay Way Road and Ferry Drive (Priority)
  - The intersection of Giinagay Way Road and River Street (Priority)
  - The intersection of Giinagay Way Road and Wallace Street (Signals)
  - The intersection of Giinagay Way Road and Winifred Street (Priority)
  - The intersection of Giinagay Way Road and Partridge Street (Signals).
- Peak Hour Analysis of the data to identify the morning (AM) and afternoon (PM) peaks on which to base further assessment as representative worst case conditions.
- Traffic model development of:
  - Existing road network performance
  - Scenario 1 - Depicts the road network during the pier strengthening, steel rehabilitation, deck repairs and painting of bridge spans 1 and 2. The assumed road network changes include:
    - Enforcing a 40 km/h reduced speed limit within the work zone
    - Assumed traffic growth of 2% annual from 2023 to 2027 (covering the planned activities)
    - Closing the left turning lanes onto and off the southern end of the Bridge (Cooper Street) on River Street
    - Redirecting traffic from the River Street West closure (left-out) to access Cooper Street via Wallace Street
    - Implementing traffic signal control with queue monitoring to the north and south of the bridge.
  - Scenario 2 - This scenario involves the adjustment of traffic signal timings along the corridor to effectively and safely manage projected traffic demands (to 2027). The future network (as per the Traffic Management Plan) is coded in accordance with the “Macksville Centre Lane Span 3-9 painting”. The assumed road network changes include:
    - Implementing a 40 km/h reduced speed limit within the work zone
    - Full access in/out of River Street East and West is permitted

- Installing traffic signal control with queue monitoring to the north and south of the bridge.
- Detour analysis for northbound, southbound and emergency services traffic in the event of full bridge closure.

Ful details of the assessment methodology are provided in Appendix D.

### 6.4.2 Existing environment

Macksville Bridge is a dual lane (one lane each way) bridge that connects Macksville South and North via Giinagay Way and provides an alternative route to the Pacific Highway for a small distance. The bridge also provides pedestrian access across the Nambucca River connecting Macksville and North Macksville.

The Macksville Bridge is located over the Nambucca River. This section of waterway is predominantly used by small to medium sized recreational vessels that are launched from upstream on the northern side of the bridge.

**Local road network and traffic**

The local road network in the vicinity of the bridge consists of the following roads:

- Giinagay Way is a collector road that provides access to the southern end of the bridge.
- River St (West) is a collector road intersecting Giinagay Way Road at the southern end of the bridge at a priority-controlled intersection with a left-in and left-out configuration provided.
- River St (East) is a collector road intersecting Giinagay Way Road at a priority-controlled intersection with a left-in and left-out configuration provided.
- Wallace St is a collector road intersecting Giinagay Way Road at a signal-controlled intersection.
- Winifred Street is a collector road intersecting Giinagay Way Road at a priority-controlled intersection.
- Partridge Street is a collector road intersecting Giinagay Way Road at a priority-controlled intersection.
- Ferry Street is a collector road intersecting Giinagay Way Road at a priority-controlled intersection.
- Bellevue Drive is a local road intersecting Giinagay Way Road at a priority-controlled intersection.

In order to establish the local traffic condition in along these roads and across the local network to inform the assessment of the proposal potential impacts the following traffic surveys where undertaken:

- Traffic count surveys - To identify the existing traffic volumes near the Macksville Bridge, weekday AM and PM peak period turning movement surveys were undertaken at the six intersections by Northern Transport Planning and Engineering on Wednesday 21 June 2023.
- Queue length surveys – To identify queue lengths, traffic intersection queue length surveys were obtained on 21 Jun 2023 between 3:00 and 4:00pm.

Both traffic count and queue length surveys where undertaken at the following locations on the local road network:

- The intersection of Giinagay Way Road and Bellevue Drive (Priority)
- The intersection of Giinagay Way Road and Ferry Drive (Priority)
- The intersection of Giinagay Way Road and River Street (Priority)
- The intersection of Giinagay Way Road and Wallace Street (Signals)
- The intersection of Giinagay Way Road and Winifred Street (Priority)
- The intersection of Giinagay Way Road and Partridge Street (Signals).

The full set of data recorded during these surveys is contained within Appendix D.

Utilising the traffic count data analysis was undertaken to establish the peak hour details for the local road network. Table 6-4 presents the overall traffic counts for the morning peak period, between 7-10 am, and the evening peak period, between 3:00–6:00pm. Notably, the traffic count during the evening peak exceeds that

of the morning peak. Therefore, it was decided that only the PM peak would be used for modelling the assessment of the proposals impacts.

Table 6-4: Traffic survey – Hourly turning counts for all assessed intersections

| Period | AM total traffic counts | Period | PM total traffic counts |
|---|---|---|---|
| 7:00–8:00am | 2979 | 3:00–4:00pm | 5250 |
| 8:00–9:00am | 4607 | 4:00–5:00pm | 5066 |
| 9:00–10:00am | 4587 | 5:00–6:00pm | 3580 |

**Public and active transport**

A pedestrian footpath runs along the western side of Macksville Bridge. This connects to paths no both the northern and southern banks for the Nambucca River.

Bus services that travel across the Macksville Bridge are as follows include:

- Bus route 358: This bus route connects Macksville with Bellingen via Nambucca Heads. This is a Monday-to-Saturday service.
- Bus route 356: This bus route connects Macksville with Scotts Head and Grassy Head. This is a Monday-to-Friday service with less frequency.
- Bus route 360: This bus route connects Coffs Harbour with Macksville via Urunga and Nambucca Heads. The service is provided from Monday to Saturday, with no service on Sunday.
- Bus routes 351 and 352: This route provides service from Macksville to Bowraville via Rodeo Dr or Wilson Rd. The service is provided for 6 days, from Monday to Saturday.

**Crash data**

A review of crash data provided by the Transport Centre for Road Safety website has been undertaken. The review is based on five years (2017-2021) for roads within the vicinity of the bridge, indicates that:

- Two crashes have been reported on Giinagay Way south to the bridge, categorised as casualties. One is at the River St / Giinagay Way intersection, and the other is at the Wallace St/Giinagay Way intersection.
- One crash was reported north of the bridge on Giinagay Way at the bend, categorised as severe injury.
- There has been one crash reported at Wallace St of minor category near the Wallace St/Giinagay Way intersection and one to the east of River St approximately 500 m away from the intersection of the casualty category.

Of five crashes reported near the bridge, apart from one severe injury category, all the others were minor and non-casual.

### 6.4.3 Potential impacts

**Construction – Single lane closure network assessment**

The proposal will single lane operations during Stages 1 and 3 and full bridge closures will be required for approximately twenty-and five-nights during Stage 2 and Stage 4, respectively. Some adjustments will also be required to local roads such as River Street to manage traffic movements in the vicinity of the bridge. A full description of the proposed staging, single lane and full closure requirements and other restrictions needed to undertake the works are provided in Section 3.0.

For the purposes of the assessment of construction traffic impacts two model scenarios were assessed for the single lane closures. For full closures detour routes where identified. These scenarios and their assumptions are made based on traffic management plans being implemented to enforce the key assumptions. More detailed information on the traffic management plans is provided in Appendix D.

Table 6-5: Traffic and transport safeguards and management measures

| Scenario | Description | Key assumptions |
|---|---|---|
| 1 | Scenario 1 depicts the road network during the Pier Strengthening, Concrete Durability, Steel Rehabilitation, Deck repairs and painting of bridge spans 1 and 2. This scenario entails the adjustment of traffic signal timings along the corridor to efficiently and safely manage projected traffic demands. Anticipated traffic growth assumes an annual increment of 2% (resulting in a total 6% increase) from 2023 to 2026, covering the planned activities, including the bridge closure. | The assumed road network changes include:<br>• The turning lane onto the bridge from River St, and off the bridge onto River St will be closed.<br>• The remining lanes on River St will remain open.<br>• Implementing traffic signal control to the north and south of the bridge. |
| 2 | Scenario 2 presents the road network for painting bridge spans 3 to 9. This scenario involves the adjustment of traffic signal timings along the corridor to effectively and safely manage projected traffic demands (to 2027). The future network (as per the Traffic Management Plan) is coded in accordance with the "Macksville Centre Lane Span 3-9 painting". | The assumed road network changes include:<br>• Implementing a 40 km/h reduced speed limit within the work zone.<br>• Full access in/out of River Street East and West is permitted.<br>• Installing traffic signal control to the north and south of the bridge. |

The network-level performance indicators for the PM peak are shown in Table 6-6. Updated lane closure scenario results present a deterioration in road network performance compared to the base-year model (2023), mainly due to the single-lane operation required on the bridge during its proposed rehabilitation. Key finding include:

- Traffic Volume increase of around 80 vehicles from 2023 to 2026, with Vehicle Hours Travelled (VHT) increase of up to 30 hours (for Scenario 1) and an average network speed of 17 and 18 kilometres per hour for Scenario 1 and Scenario 2, respectively.
- No unrealised (latent) demand was observed under both Scenario 1 and Scenario 2 models, indicating that the proposed traffic management plans are not expected to realise excessive network congestion.

Table 6-6: Summary of network level indicator results – PM peak

| Indicator | Base (2023) | Scenario 1 (2026) | Scenario 2 (2027) |
|---|---|---|---|
| Demand Input (no) | 1,384 | 1,469 | 1,498 |
| VKT (km) | 622 | 869 | 858 |
| VHT (hrs) | 21 | 52 | 48 |
| Vehicle Delay (sec) | 25 | 76 | 67 |
| Vehicle Active (no) | 21 | 54 | 47 |
| Vehicle Arrived (no) | 1,305 | 1,483 | 1,508 |
| Latent Demand | 0 | 0 | 0 |
| Average Network Travel Speed (km/hr) | 29 | 17 | 18 |

Figure 6-1 illustrates the potential travel time impacts of scenarios 1 and 2 against the current base case.

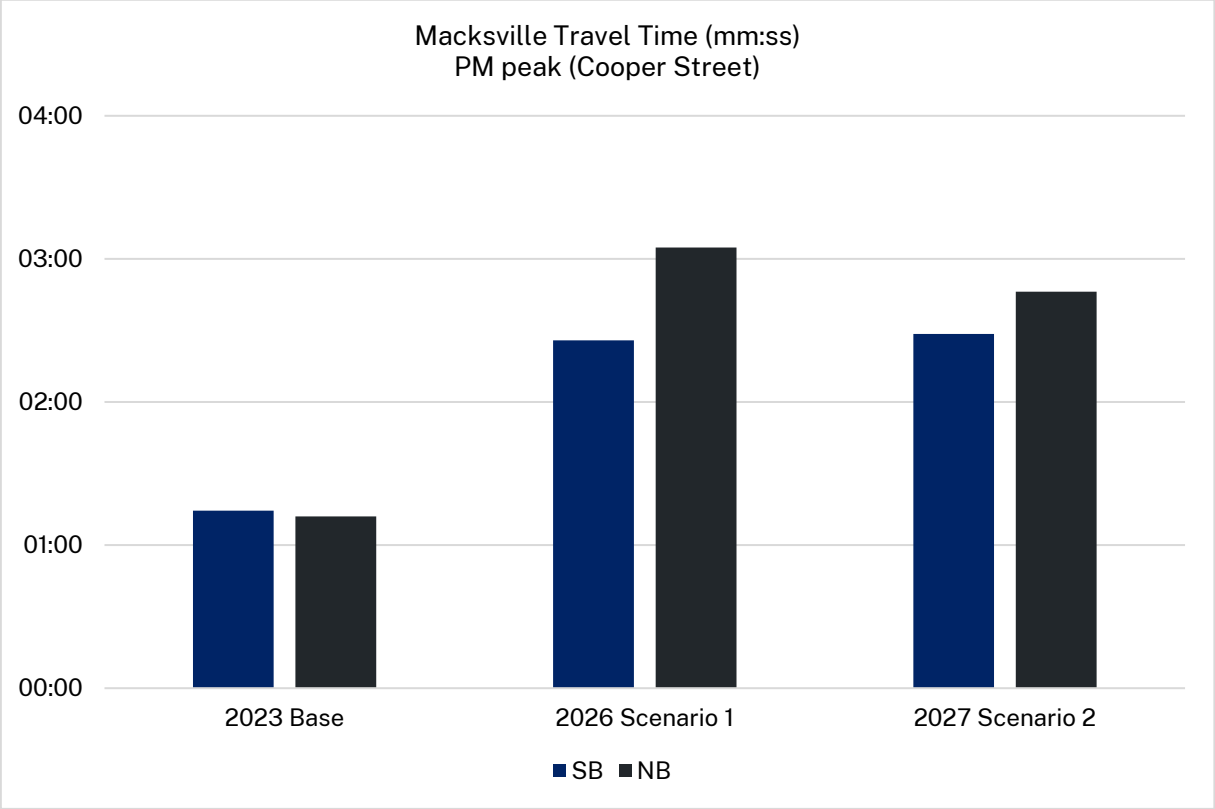



Figure 6-1: Summary of travel time impacts

### Construction – Single lane closure intersection assessment

The Level of Service results for six intersections are summarised in Table 6-7, categorised by the LOS criteria for intersection performance shown in Table 6-8. The results demonstrate that all intersections operate acceptably in the 2026 and 2027 horizon years, with Level of Service (LOS) of D or higher.

Table 6-7: Intersection Level of Service definitions

| Level of service | Minimum Delay (sec) | Maximum Delay (sec) |
|---|---|---|
| LoS | Minimum Delay (sec) | Maximum Delay (sec) |
| LoS A | 0 | 14 |
| LoS B | 15 | 28 |
| LoS C | 29 | 42 |
| LoS D | 43 | 56 |
| LoS E | 57 | 70 |
| LoS F | 71+ | - |

Table 6-8: Level of Service results and delays

| Name | Base Model (2023) | Scenario 1 (2026) | Scenario 2 (2027) |
|---|---|---|---|
| Giinagay Way/Bellevue Drive | 3 | 2 | 1 |
| Giinagay Way/Ferry Street | 3 | 30 | 30 |
| Giinagay Way/River Street | 4 | 23 | 50 |
| Giinagay Way/Wallace Street | 29 | 45 | 25 |
| Giinagay Way/Winifred Street | 3 | 11 | 2 |
| Giinagay Way/Partridge Street | 11 | 16 | 7 |

The intersection modelling results show that all intersections (south of Bellevue Drive) will experience minor increases in delay, under single lane operation of Giinagay Way. Modelling has shown that when delays occur, these may be up to two minutes for a commuter.

**Construction – Full lane closure assessment**

Full bridge closures will be required for twenty-and five-nights during Stage 2 and Stage 4, respectively. During this period, detours for both light and heavy and emergency vehicles will be required. The following detours would be implemented during the full closure portions of these stages:

- Northbound: Macksville south to Macksville north
  - Light and heavy vehicles:
    - Travel south to the Bald Hill Road interchange and turn left turn (north) to access the Pacific Highway.
    - Travel north on the Pacific Highway from the Bald Hill Road interchange, exiting the Pacific Highway at the Giinagay Way interchange, and undertake a U-turn for southbound travel on the Pacific Highway using the interchange ramps.
    - Travel south on the Pacific Highway and exit the Old Coast Road interchange to access Giinagay Way.
    - Travel along Giinagay Way to reach Macksville north.
    - This detour is about 25 km or 18 minutes travel time.
- Southbound: Macksville south to Macksville south
  - Light and heavy vehicles:
    - Travel north along Giinagay Way to the Old Coast Road interchange to access the Pacific Highway northbound.
    - Travel north along the Pacific Highway to the Giinagay Way interchange, exiting the Pacific Highway at the Giinagay Way interchange and undertake a U-turn for southbound travel on the Pacific Highway using the interchange ramps.
    - Continue south on the Pacific Highway to the Bald Hill Road interchange using the Giinagay Way exit.
    - Travel north on Giinagay Way to Macksville South.
    - This detour is about 25 km or 18 minutes travel time.

It is noted that a detour route for emergency services is available through the use of a U-turn facility which is location approximate 1.4 km north of the Old Coast Road interchange, which provides a shorter detour between Macksville north and Macksville south. Detour route mapping is provided in Appendix D.

**Construction – Traffic management recommendations**

The traffic assessment identified a number of measures which could be implemented to minimise and manage traffic impacts across the duration of the proposal as the works progress through each stage. Table 6-9 provides a summary of the identified impacts, who is likely to experience them and measures that may be implemented to manage these impacts.

Table 6-9: Summary of road user impacts and proposed mitigation measures

| Duration | Road User Group Impacted | Nature of impact | Mitigation measure |
|---|---|---|---|
| Single lane operation over approximately 3 years | Light vehicles | Both northbound and southbound travel time are projected to increase by approximately 2 minutes.<br>The maximum queue is projected not to extend to Bellevue Road (north) and Forrester Lane (South) during peak hours. | Increase signal phase time for intersections of Wallace Street and Partridge Street (from 65 sec to 100 sec) is recommended, to better align with cycle time for contra-flow traffic movements on Macksville Bridge.<br>Establishing detours using local roads to access Giinagay Way at Boundary Street, particularly for southbound movements. This would enable prioritisation of the traffic signals at Partridge and Wallace streets for northbound movements. |
| | Public transport (incl., school, scheduled) | Public transport services (including school buses) are expected to experience additional delays, particularly for northbound travel. | Bus operators are provided with advance notice of expected delays. |
| | Pedestrians and cyclists | No changes along the bridge. | Although there are no planned pedestrian / cycling facilities changes along the bridge, it is recommended to provide notices in advance to inform people of the upcoming construction, including dates and expected disturbance levels. |
| | OSOM | Northbound and Southbound detour distance is approximately 10.5 kilometres or approximately 9 minutes travel time (via the Pacific Highway). | Advance warnings will be required on both the Pacific Highway and Giinagay Way (for northbound travel) for OSOM operators with a destination on the northern side of the Nambucca River. |
| | Heavy vehicles | During rehabilitation of steel bridge structural elements, heavy vehicles will not be allowed to travel across the bridge.<br>Vehicle restrictions are in place for vehicles with a height exceeding 4.6 meters. Vehicles taller than 4.6 meters are required to take a detour. The detour for both Northbound and Southbound extends for approximately 25 kilometres or roughly 18 minutes in travel time. | Temporary signs directing heavy vehicles to the Nambucca Heads interchange are recommended. |
| Full bridge closures during nightworks for approximately 25 days. Closed to heavy vehicles 24/7 during this time. | Light vehicles | During day times, northbound travel times are projected to increase by approximately three minutes, while southbound travel times are projected to increase by approximately 1 minute.<br>For night-time travel, northbound and southbound detour distance is approximately 25 kilometres or | Where possible, full bridge closures are limited to night times to minimise impacts.<br>Provision of advance warnings of full bridge closures on both the Pacific Highway and Giinagay Way (for northbound travel) for drivers with a destination on the northern side of the Nambucca River. |

| Duration | Road User Group Impacted | Nature of impact | Mitigation measure |
|---|---|---|---|
| | | approximately an extra 18-minute travel time (based on Google Maps travel time estimate). | Advance notice provided to Council and emergency services for full bridge closures. Should it be required, emergency service access will be provided across the bridge.<br><br>A concern with detoured traffic will be the attractiveness of existing U-turn facilities on the Pacific Highway between the Old Coast Road and Giinagay Way interchanges (limited to emergency vehicles only). Temporary signs are recommended to ensure all detoured vehicles are directed to the Nambucca Heads interchange are recommended to prevent this occurring. |
| | Public transport (incl., school, scheduled) | Public transport services (including school buses) are expected to experience additional delays, particularly for northbound travel. | Bus operators are provided with advance notice of expected delays. |
| | Pedestrians and cyclists | No changes along the bridge. | Although there are no planned pedestrian / cycling facilities changes along the bridge, it is recommended to provide notice in advance to inform people of the upcoming construction, including dates and expected disturbance levels. |
| | OSOM | During full bridge closures, OSOM vehicles will be unable to use the bridge, with northbound and southbound detour distances for OSOM vehicles is approximately 10.5 kilometres or approximately 9 minutes travel time (based on Google Maps travel time estimate). | Advance warnings will be required on both the Pacific Highway and Giinagay Way (for northbound travel) for OSOM operators with a destination on the northern side of the Nambucca River. |
| | Heavy vehicles | Heavy vehicles will be unable to use the bridge, with northbound and southbound detour distances for heavy vehicles is approximately 10.5 kilometres or approximately 9 minutes travel time (based on Google Maps travel time estimate).<br><br>Northbound and Southbound detour distance is approximately 25 kilometres or approximately 18 minutes travel time (based on Google Maps travel time estimate). | Advance warnings will be required on both the Pacific Highway and Giinagay Way (for northbound travel) for heavy vehicle drivers with a destination on the northern side of the Nambucca River.<br><br>A concern with detoured traffic will be the attractiveness of existing U-turn facilities on the Highway between the Old Coast Road and Giinagay Way interchanges (limited to emergency vehicles only). Temporary signs directing road users to the Nambucca Heads interchange are recommended to prevent this from occurring. |

**Operation**

Once operational the road network will return to its normal operation with no ongoing changes.

### 6.4.4 Safeguards and management measures

Traffic and transport safeguards are detailed in Table 6-10.

Table 6-10: Traffic and transport safeguards and management measures

| Impact | Environmental safeguards | Responsibility | Timing |
|---|---|---|---|
| Queue lengths | • Traffic Management Plans (TMPs) would be prepared by the project team and approved by Transport road operations team prior to implementation. This will include review and update of TMPs between stages if necessary or when modifications to management measures are proposed. The TMPs will take into consideration the management measures identified in Table 6-9 of Section 6.4.3 of this REF for implementation. | Contractor | Construction |
| Bridge closures | • Work planning is to limit the complete closure of the bridge to out of hours periods to the extend practical. | Contractor | Construction |
| Bridge closure notifications | • Advanced warning of bridge closures are to be provided to Council, emergency services, transport and freight operators and the public. Road users notices are to include detour information. | Contractor | Construction |

## 6.5 Noise and vibration

### 6.5.1 Methodology

A specialist noise and vibration assessment was completed for the proposal by GHD (GHD; refer to Appendix E. The assessment considered potential noise and vibration impacts of the proposal. The assessment consisted of:

- A desktop review of the surrounding environment
- Site survey to confirm noise monitoring location for unattended noise monitoring for a minimum period of one week at two (2) locations representative of the local environment (nearest residential dwellings) in order to determine local background noise levels at the nearest sensitive receivers.

**Guidelines**

The noise and vibration assessment was conducted in accordance with the following NSW Government guidelines and policies:

- NSW EPA Interim Construction Noise Guideline (DECC 2009)
- Construction Noise and Vibration Guideline (Transport 2023)
- NSW Noise Policy for Industry (EPA 2017)
- AS2436 – 2010 Guide to noise and vibration control on construction, demolition and maintenance sites
- Transport Construction and Maintenance Noise Estimator and Environmental Noise Management Manual (ENMM)
- NSW Road Noise Policy (DECCW 2011)
- Assessing Vibration: A Technical Guideline (DEC 2006)

- German Standard DIN 4150, Part 3: Structural Vibration in Buildings: Effects on Structures.

**Work hours**

Works hours and staging will be as described in the project description in Section 3.3.

**Noise monitoring**

Ambient noise logging was undertaken at the following locations:

- Location M1 - Residential receiver 42 Bellevue Drive
- Location M2 - Residential receiver 7 McKay Street.

An operator attended measurement was undertaken at each logging location at the time of their deployment to assist in identification and quantification of noise sources present. The ambient noise monitoring consisted of continuous, unattended noise logging and operator attended noise surveys. The operator attended noise surveys help to define noise sources and the character of noise in the area and are, therefore, used to qualify unattended noise logging results. Monitoring was undertaken from Wednesday 31 May 2023 to Friday 9 June 2023. Full details of the background noise logging results are available in Appendix E.

**Assessment and reporting**

The construction noise and vibration assessment has been undertaken based on the following methodology:

- The Rating Background Levels (RBLs) for the proposal were calculated from the noise monitoring data obtained at the noise monitoring locations. The RBLs were used to establish construction Noise Management Levels (NMLs) with consideration of the ICNG.
- A list of construction activities and machinery were determined in consultation with Transport. Representative sound power levels and vibration levels for the selected plant were obtained from data provided in CNVG, AS 2436 and BS 5228.
- Noise associated with construction works was predicted using noise modelling software. The results of this modelling was then assessed against the construction noise management levels for the proposal.
- Construction traffic was assessed with consideration to the RNP for assessment of construction traffic on public roads.
- Vibration levels from vibration-intensive construction plant and equipment were predicted and assessed.
- Road traffic noise criteria - Appropriate criteria for each receiver was identified using the RNP and NCG.

Following completion of modelling and verification the NVIA report was competed as attached at Appendix E.

### 6.5.2 Existing environment

**Noise sensitive receivers**

The proposal area spans the Nambucca River over the existing bridge. On the northern bank of the river is a small residential area consisting of approximately 50 – 60 detached residential dwellings surrounded to the north by open farmland. The noise environment in this area is typical of a rural setting with transport noise impacts from the road traffic traversing the bridge itself and traveling through Giinagay Way. Transport noise is also sometimes influenced by the Mail North Rail Line located about 800 metres to the west.

On the southern bank of the river the noise environment is more typical of an urban setting. Land uses include a mix of commercial business surrounded by residential dwellings. Traffic along Giinagay Way and urban traffic on local roads

Representative receivers have been selected in each of these areas being locations M1 and M2 as listed in Section 6.5.1. Background noise level in these locations are described below.

**Background noise levels**

A summary of the background noise levels for the two selected representative receivers is provided in Table 6.11 and

Table 6.12 for receiver M1 and M2 respectively. These noise levels were used to define the appropriate construction noise management levels.

Table 6.11: Summary of noise monitoring results – M1 (36819) dBA

| Date | Rating background level 90th percentile $L_{A90(15min)}$ | | | Ambient noise levels $L_{Aeq(period)}$ | | |
|---|---|---|---|---|---|---|
| | Day[1] | Evening[1] | Night[1] | Day[1] | Evening[1] | Night[1] |
| Wednesday-31-May-23 | 46 | 33 | 32 | 58 | 52 | 54 |
| Thursday-1-Jun-23 | 48 | 35 | 31 | 59 | 53 | 51 |
| Friday-2-Jun-23 | 47 | 38 | 29 | 61 | 53 | 49 |
| Saturday-3-Jun-23 | 43 | 34 | 27 | 57 | 52 | 52 |
| Sunday-4-Jun-23 | 44 | - | - | 60 | - | - |
| Monday-5-Jun-23 | 47 | 33 | 29 | 58 | 52 | 50 |
| Tuesday-6-Jun-23 | 46 | 34 | 29 | 58 | 52 | 51 |
| Wednesday-7-Jun-23 | 47 | 35 | 31 | 59 | 54 | 51 |
| Thursday-8-Jun-23 | 46 | - | - | 59 | - | - |
| Friday-9-Jun-23 | 49 | - | - | 59 | - | - |
| **RBL and Overall $L_{eq}$** | **47** | **34** | **29** | **59** | **53** | **51** |

Note:

1. Daytime 7:00am to 6:00pm, Evening 6:00pm to 10:00pm, Night-time 10:00pm to 7:00am.
   On Sundays and Public Holidays.
   Daytime 8:00am to 6:00pm, Evening 6:00pm to 10:00pm, Night-time 10:00pm to 8:00am.
2. "-" denotes period where there is no useable data after exclusions due to either excessive winds or periods of rain.

Table 6.12: Summary of noise monitoring results – M2 (97530) dBA

| Date | Rating background level 90th percentile $L_{A90(15min)}$ | | | Ambient noise levels $L_{Aeq(period)}$ | | |
|---|---|---|---|---|---|---|
| | Day[1] | Evening[1] | Night[1] | Day[1] | Evening[1] | Night[1] |
| Wednesday-31-May-23 | 39 | 34 | 31 | 50 | 46 | 52 |
| Thursday-1-Jun-23 | 38 | 35 | 32 | 63 | 43 | 47 |
| Friday-2-Jun-23 | 37 | 37 | 30 | 51 | 45 | 46 |
| Saturday-3-Jun-23 | 38 | 29 | 26 | 50 | 44 | 52 |
| Sunday-4-Jun-23 | 42 | - | - | 57 | - | - |
| Monday-5-Jun-23 | 37 | 31 | 27 | 47 | 42 | 39 |
| Tuesday-6-Jun-23 | 38 | 35 | 31 | 48 | 45 | 47 |
| Wednesday-7-Jun-23 | 38 | 38 | 33 | 50 | 47 | 46 |
| Thursday-8-Jun-23 | 38 | - | - | 48 | - | - |
| Friday-9-Jun-23 | 40 | - | - | 47 | - | - |
| **RBL and Overall $L_{eq}$** | **38** | **35** | **31** | **55** | **45** | **48** |

Note on following page:

1. Daytime 7:00am to 6:00pm, Evening 6:00pm to 10:00pm, Night-time 10:00pm to 7:00am.
   On Sundays and Public Holidays.
   Daytime 8:00am to 6:00pm, Evening 6:00pm to 10:00pm, Night-time 10:00pm to 8:00am.
2. "-" denotes period where there is no useable data after exclusions due to either excessive winds or periods of rain.

### 6.5.3 Criteria

The criteria utilised have been drawn from the relevant guidelines as listed in Section 6.5.1. A detailed description of the project specific criteria is provided in Appendix E.

### 6.5.4 Potential impacts

**Construction**

Prediction of the construction noise impacts onto nearby noise sensitive receptors has been performed using Transport's construction and maintenance noise estimator tool (March 2017). Construction noise impact distances for each activity during standard hours are presented in Table 6.13 and Table 6.14. Noise contours for each activity are presented in Appendix E. Where sensitive receivers are located within the distances, they are predicted to exceed the corresponding management level. The predicted values presented in the tables are based on the assumptions that:

- There is no effective barrier between the proposal site and the nearest noise sensitive premises.
- All topography is assumed to be flat.
- The construction equipment will be operating continuously at full capacity for the full 15-minute evaluation period which is very unlikely in the actual construction site.
- All the construction equipment will be operating simultaneously to estimate the worst-case condition, which is unlikely to occur during actual construction.
- The construction equipment will not generate any annoying characteristics (low frequency, tonality, impulsiveness, etc.).

Table 6.13: Construction noise impact distances - Northside

| ID | Residential Receivers | | | | | | Commercial Receivers (70 dBA) | Active recreation areas (65 dBA) | Passive recreation areas (60 dBA) | Education receivers (55 dBA)[2] |
|---|---|---|---|---|---|---|---|---|---|---|
| | Noise Management Level (57 dBA) | Highly Affected Level (75 dBA) | OOHW1: Day (52 dBA) | OOHW1: Evening (39 dBA) | OOHW2:Night (35 dBA) | Sleep disturbance (52 dBA) | | | | |
| S1 | < 216 m | < 27 m | < 332 m | See note 3 | See note 3 | See note 3 | < 57 m | < 105 m | < 166 m | < 257 m |
| S2 | < 133 m | < 14 m | < 209 m | < 620 m | < 850 m | < 301 m | < 26 m | < 54 m | < 101 m | < 160 m |
| S3 | < 278 m | < 42 m | < 423 m | See note 3 | See note 3 | See note 3 | < 83 m | < 137 m | < 214 m | < 329 m |
| S4 | < 160 m | < 19 m | < 248 m | < 727 m | < 991 m | < 356 m | < 35 m | < 71 m | < 122 m | < 191 m |
| S5 | < 144 m | < 16 m | < 224 m | < 661 m | < 904 m | < 328 m | < 29 m | < 61 m | < 109 m | < 172 m |

Notes:

1. Standard construction hours are defined as: Monday to Friday 7:00 am to 6:00 pm and Saturdays from 8:00 am to 1:00 pm.
2. Assumed equivalent external noise level with windows open.
3. No Evening or Night work proposed.

Table 6.14: Construction noise impact distances – Southside

| ID | Residential Receivers | | | | | | Commercial Receivers (70 dBA) | Active recreation areas (65 dBA) | Passive recreation areas (60 dBA) | Education receivers (55 dBA)[2] |
|---|---|---|---|---|---|---|---|---|---|---|
| | Noise Management Level (48 dBA) | Highly Affected Level (75 dBA) | OOHW1: Day (43 dBA) | OOHW1: Evening (40 dBA) | OOHW2:Night (36 dBA) | Sleep disturbance (52 dBA) | | | | |
| S1 | < 463 m | < 27 m | < 693 m | See note 3 | See note 3 | See note 3 | < 57 m | < 105 m | < 166 m | < 257 m |
| S2 | < 295 m | < 14 m | < 448 m | < 572 m | < 786 m | < 301 m | < 26 m | < 54 m | < 101 m | < 160 m |
| S3 | < 586 m | < 42 m | < 870 m | See note 3 | See note 3 | See note 3 | < 83 m | < 137 m | < 214 m | < 329 m |
| S4 | < 349 m | < 19 m | < 528 m | < 672 m | < 918 m | < 356 m | < 35 m | < 71 m | < 122 m | < 191 m |

Notes:

1. Standard construction hours are defined as: Monday to Friday 7:00am to 6:00pm and Saturdays from 8:00am to 1:00pm.
2. Assumed equivalent external noise level with windows open.
3. No Evening or Night work proposed.
4. Noise impacts from construction scenario S5 have not been calculated for sensitive receivers located on the southside of the bridge given both proposed compound locations are located on the northside. Any noise impacts from compound activities onto sensitive receivers located on the southside are anticipated to be less than Scenarios S1 to S4 presented above.

Predicted results indicate that noise associated with the rehabilitation works are expected to impact on nearby sensitive receivers.

The predicted noise exceedances are due to the nature of the proposed activities and their proximity to the nearest sensitive receptors. The fact that exceedances have been identified does not indicate that the proposed activities cannot be undertaken, but that care needs to be taken to identify feasible and reasonable mitigation and management measures that can be implemented to minimise the potential impacts. Proposed noise mitigation and management recommendations have been provided in Section 6.5.5.

As per the requirements of the ICNG, predictions are based on a "worst case" assessment and, in most cases, the measured levels during rehabilitation works are likely to be lower than predicted in this assessment. The modelling assumes that all equipment is operating at the same time, which is rarely the case in practice. The works have also been planned to be undertaken at night for a period of approximately four weeks to avoid a prolonged period of night works which may extend these impacts.

***Road noise***

The proposal would require light and heavy construction vehicle movements mainly associated with:

- Delivery of construction materials
- Spoil and waste removal
- Delivery, relocation and removal of construction equipment and machinery
- Workers travelling to, from and within the construction site.

The proposal is located on Giinagay Way and is also accessible through River Street on the southside of the bridge and Ferry Street on the northside of the bridge. Construction vehicles would make use of Giinagay Way.

The volume of construction work force traffic during the remediation works is anticipated to be low in comparison to existing traffic volumes on Giinagay Way. Specific numbers are yet to be determined however it is expected that the increase in noise levels would be below 2 dB. The increase in noise levels should be predicted in the Construction Noise and Vibration Management Plan.

**Operation**

There is not expected to be any significant ongoing operational noise or vibration impacts as a result of the proposal.

### 6.5.5 Safeguards and management measures

Noise and vibration safeguards are detailed in Table 6-15.

Table 6-15: Noise and vibration safeguards and management measures

| Impact | Environmental safeguards | Responsibility | Timing |
|---|---|---|---|
| Noise and vibration | All sensitive receivers (e.g., schools and local residents) likely to be affected will be notified at least 7 days prior to commencement of any works associated with the activity that may have an adverse noise or vibration impact in accordance with Section 8.3 of the CNVIA (GHD 2024). The notification will provide details of:<br>• The project<br>• The construction period and construction hours<br>• Contact information for project management staff<br>• Complaint and incident reporting<br>• How to obtain further information. | Contractor | Prior to and during construction |

| Impact | Environmental safeguards | Responsibility | Timing |
|---|---|---|---|
| Noise and vibration | Where practical in-principial noise controls, as listed in section 8.1 of the CNVIA (GHD, 2024) are to be employed, including:<br>• Substitution of noise equipment with less noisy alternatives<br>• Modification of existing equipment e.g. use of attenuation<br>• Use and site equipment in a manner which reduces the potential noise impacts at sensitive receivers e.g. use buildings, structures or topography to avoid line of site from noise source to receiver<br>• Undertake regular maintenance to ensure equipment is running at optimal conditions and not producing excessive noise. | Contractor | Construction |
| Noise and vibration | Where impacts are unavoidable particularly during out of hours works apply the additional mitigation measures listed in Sections 8.3 and 8.4 of the CNVIA (GHD, 2024) | Contractor | Construction |

## 6.6 Aboriginal cultural heritage

### 6.6.1 Existing environment

A search of the Aboriginal Heritage Information Management System (AHIMS) was undertaken on 28 April 2023 and is attached at Appendix F. No known Aboriginal sites are recorded within the search area. The proposal site is comprised of a highly disturbed and modified landscape. The majority of the works will be undertaken on the existing Macksville Bridge with ancillary facilities located in previously disturbed areas.

### 6.6.2 Potential impacts

**Construction**

A Stage 1 assessment has been undertaken in accordance with Transport's Procedure for Aboriginal Cultural Heritage Consultation and Investigation (PACHCI). This assessment confirmed that the proposal is unlikely to have an impact on Aboriginal cultural heritage due to the:

- The majority of work be located on the bridge structure
- Supporting works on the northern and southern sides of the river consist of compounds requiring minimal ground disturbance in areas subject to high levels of historical disturbance
- AHIMS results did not identify any recorded artefacts in the vicinity.

Impacts to Aboriginal cultural heritage are not considered likely due to the location and scope of the proposed works. Safeguards are provided to ensure any unknown Aboriginal cultural heritage items uncovered during works are not significantly affected.

**Operation**

It is not expected that operation of the proposal would have an impact on Aboriginal cultural heritage.

### 6.6.3 Safeguards and management measures

Aboriginal heritage safeguards are detailed in Table 6-16.

Table 6-16: Aboriginal cultural heritage safeguards and management measures

| Impact | Environmental safeguards | Responsibility | Timing |
|---|---|---|---|
| Unexpected finds | The Standard Management Procedure - Unexpected Heritage Items (Transport, 2015) will be followed in the event that an unknown or potential Aboriginal object/s, including skeletal remains, is found during construction. This applies where Transport does not have approval to disturb the object/s or where a specific safeguard for managing the disturbance (apart from the Procedure) is not in place.<br>Work will only re-commence once the requirements of that Procedure have been satisfied. | Contractor | During construction |
| Aboriginal cultural heritage | All personnel working on the site are to be advised of their responsibilities regarding Aboriginal cultural heritage under the NP&W Act. | Contractor | Pre-construction, construction |

## 6.7 Non-Aboriginal heritage

### 6.7.1 Methodology

A Statement of Heritage Impact (SoHI) has been prepared by Everick Heritage Consultants (2024) for the proposal (refer to Appendix G. Searches of statutory and non-statutory heritage registers were undertaken, including the:

- NSW State Heritage Register
- NSW State Heritage Inventory
- Nambucca Local Environment Plan 2010
- S170 registers
- Commonwealth Heritage List
- The National Trust Heritage List
- World Heritage List.

### 6.7.2 Existing environment

The Nambucca River Bridge Item is listed as item No. 4311596 under Heritage Act 1977 Section 170 Transport listing which describes the bridge as follows:

> *Macksville Bridge over the Nambucca River consists of two steel beam approach spans 10.66m in length, five steel plate girder (through girder) approach spans (each span is 24.94m) and two steel Pratt truss spans including longitudinal steel stringers and a reinforced concrete slab deck slab 43.28m in length for a total length of 218.30m.*
>
> *The Bridge has a carriageway width of 6.1m and a walkway of 1.46m on the upstream side attached to plate girders for approach spans and to the bottom chords for truss spans. The vertical clearance of the steel truss span is approximately 7m.*

Within the listing, the heritage significance of the bridge is described as:

> *The Bridge over the Nambucca River is an important steel truss bridge which forms a local 'gateway' landmark for the town of Macksville due to its impressive size. Furthermore, it was the first steel truss bridge to be constructed in NSW in which caissons consisting of timber cylinders were utilised. The Macksville Bridge has been assessed as being of local significance* (Transport, s170 register).

To better understand the significance of the major elements or component of the bridge and their contribution to the overall significance of the bridge in its entirety an assessment was undertaken in accordance with the NSW Heritage Council methodology. Table 6-17 provides definitions for the grading system used to establish an appropriate level of heritage significance and Table 6-18 contains the bridge specific analysis and grading.

Table 6-17: Grading system for heritage significance

| Grading | Justification | Status |
|---|---|---|
| Exceptional | Rare or outstanding element directly contributing to an item's local or State significance | Fulfils criteria for local or State listing |
| High | High degree of original fabric. Demonstrates a key element of the item's significance. Alterations do not detract from significance | Fulfils criteria for local or State listing |
| Moderate | Altered or modified elements. Elements with little heritage value, but which contribute to the overall significance of the item | Fulfils criteria for local or State listing |
| Low | Alteration detracts from significance. Difficult to interpret | Does not fulfil criteria for local or State listing |

| | | |
|---|---|---|
| Intrusive | Damaging to the item's heritage significance | Does not fulfil criteria for local or State listing |

Table 6-18: Macksville Bridge composite element significance grading

| Bridge component | Significance grading | Description |
|---|---|---|
| Truss Spans | Exceptional | The truss type employed in this Bridge is the Pratt truss that was widely used for road and railway bridges of the period. A feature of the steel design is that the bridge components clearly reflect the forces they are transmitting. In a Pratt truss the sloping members are in tension with the vertical members in compression. Parallel flat bars, suitable for tension but useless in compression, were used for the sloping members. The verticals were also made from two channel sections laced together in order to maximise their resistance to buckling under compression. Also, the top horizontal member or chord, which is in compression, is much stockier than the bottom chord, which is in tension (Cardno MBK, 2001:77). As with other trusses, a camber is built into the bottom chords to provide the optical illusion that the Bridge does not sag under dead load. The sliding and fixed bearings are of cast steel. The expansion bearing has specially fabricated cast steel turned roller bearings. Before 1930, steel truss bridges were constructed with built-up members fabricated in the workshop by riveting and later connected by riveting in the field. Macksville Bridge was one of the last bridges so constructed as from 1934 onwards, steel structures were welded in the workshop and all field connections were riveted or bolted. The welding of steel bridges required new design methods in respect to the strength of the connections and the shape of the structural sections (DMR, 1976:170). |
| Approaches | Moderate | The steel beam and steel plate girder approach spans are of a relatively standard design used in the majority of metal road bridges constructed in NSW. |
| Piers | Moderate | The bridge consists of concrete cylinders founded on rock and are of a type that was in general use for large steel truss structures (DMR, 1946:53). A heavy reinforced concrete cross member braces the cylinders of each pier. The concrete finish to the abutments is notable in that it is shutter or board finished. |
| Carriageway | Low | The deck of the truss spans is concrete slab cast on the stringers and cross girders. The cross girders are connected to the trusses at the vertical web members. Since the carriageway is only 6.10 m wide the Bridge is technically a "narrow" bridge. The carriageway is drained by a series of scuppers that are spaced at regular intervals. |
| Abutments and Balustrades | Low | The design of the abutments is common to other steel trusses, being constructed with a reinforced concrete deck, girders, columns and walls, and placed on rock foundations. The function of the abutments is to retain the fill material of the approach embankments in addition to supporting the approach spans. Shuttering was used to provide detail to the flat concrete surfaces of the abutments and piers. Board and joint marks were used for this purpose. |
| Railing | Low | The railings in place on the Bridge consist of upper and lower rails (2-inch diameter pipe) set within cast iron bases. The use of posts at regular intervals strengthens the railing though it does not comply with the present 1996 AUSTROADS standards for a Level 2 crash barrier. The approaches to the Bridge are lined with "Armco" guard railing. |
| Walkway | Low/ Intrusive | The walkway on the western side of the Bridge was installed in 1951. While the walkway is not an original element of the Bridge it has nonetheless been in place for over half of the Bridge's period of operation and has thus acquired a degree of heritage value in itself. The walkway is of a standard design utilised on other steel truss bridges in NSW. |

### 6.7.3 Potential impacts

A detailed analysis of the proposals potential impact the heritage of the bridge are contained in the SoHI attached in Appendix G and summarised below.

**Construction**

The proposed works are multi-staged and include a wide scope of repair and maintenance work on the Bridge. The majority of the work will have a positive or neutral heritage impact. The deck repairs, painting and cleaning are all positive impact as they both help maintain and restore the Bridge to its initial design without affecting original fabrics. The visual aspect of the Bridge's heritage significance will be heavily impacted for the short term. However, the scaffolding, material screening, barges and jetties are temporary and should not impact the fabric of the Bridge, provided penetrations are minimised to the extent practical. The installation of bird spikes and steel repairs to the walkway will have minor impacts to the Bridge's fabrics and visual outlook.

Works that will have a moderate impact on the heritage significance of the bridge, such as the concrete works around the piers or the steel works, are essential to the ongoing use of the bridge. Although these works will be affecting the original bridge concrete fabric, they will also maintain the integrity of the bridge and preventing future corrosion and damage.

Visually the heritage significance of the bridge will only be impacted in the short term and these works will be reversed at the conclusion of the proposal. A portion of the original metal and concrete fabric of the bridge are being impacted, however these are essential works for the ongoing use and maintenance of the bridge. The main heritage significance associated with this bridge is its importance to the community as a river crossing and the Pratt Truss design. The works will not alter either of these qualities of the bridge. The bridge will continue to allow vehicles and pedestrians to move across the Nambucca River, even during the majority of the works schedule. The Pratt Truss design will be maintained due to the steel works and the overall maintenance of the bridge.

It is not considered likely that the proposed works will impact on any known or unknown archaeological sites within the vicinity of the proposal area.

**Operation**

Once operational no major impacts to the fabric of the bridge are proposed as part of this proposal. Ongoing regular unintrusive inspections and maintenance will continue to be undertaken as prior to the proposal. Should any maintenance or upgrade work be required in the future that may impact on the heritage significance of the bridge these would be subject to separate assessment and approval prior to being undertaken to ensure they are sympathetic to the heritage of the bridge.

### 6.7.4 Safeguards and management measures

Non-Aboriginal heritage safeguards are detailed in Table 6-19.

Table 6-19: Non-Aboriginal heritage safeguards and management measures

| Impact | Environmental safeguards | Responsibility | Timing |
|---|---|---|---|
| Heritage fabric | The number of additional penetrations to original metal and cement fabric are to be minimised where possible. If attachments are required, penetrations into existing joins or at the location of current holes is preferrable. | Transport | Construction |
| Heritage fabric | Preference for replacements components should be with similar materials to the extent possible. | Transport | Construction |
| Unexpected finds | If at any time during the proposal construction, historical heritage materials, features and/or deposits are found, the Unexpected Heritage Finds Guideline (Transport 2022) would be followed. Specifically, the following actions would be undertaken:<br>• All construction that could potentially harm the historical heritage materials, features or deposits would cease. Construction that does not have the potential to harm the historical heritage would continue only if it is outside the minimum 10 m buffer. | Transport | Construction |

| Impact | Environmental safeguards | Responsibility | Timing |
|---|---|---|---|
| | • The on-site supervisor would inform Transport environment staff of the discovery.<br>• A suitably qualified and experienced archaeologist (the archaeologist) would be contacted as soon as practicable in relation to the unexpected discovery of any historical heritage and would be responsible for recording, in detail, the location and context of any historical heritage.<br>• It is preferable to avoid impacts on historical heritage where possible. If avoidance is not possible, the archaeologist would conduct a salvage excavation. The aims of the salvage excavation would be to obtain as much information as possible from the historical heritage materials, features and/or deposits.<br>• The archaeologist would provide a report detailing the excavation, salvage and analysis results to Heritage NSW at the completion of the salvage. | | |

## 6.8 Landscape character and visual impacts

### 6.8.1 Existing environment

The Macksville Bridge is highly visible to residents, visitors and workers on both sides of the Nambucca and has been a feature of the visual landscape of the northern portion of the township of Macksville since its construction in 1931. The bridge is as much a visual part of Macksville as it has been a key functional element of the towns development and important piece of transport infrastructure as detail in the non-Aboriginal heritage discussion in Section 6.7.

From the southern bank of the Nambucca River the bridge is visible from the passive recreation areas along the riverbank as well as a number of business and residential dwellings along River Street. From the northern bank there is similarly passive recreation areas and a number of dwellings with unrestricted views to the bridge.

The bridge itself consists of nine spans with a steel truss between the two central spans which are painted bridge grey. A detail description of the exiting bridge is provided in Appendix G. The existing bridge also includes a coloured LED lighting system installed by Nambucca Shire Council onto the Transport asset with Transport permission. The LED system provides for lighting displays at night and highlights the prominence of the bridge to local residents and tourists alike.

### 6.8.2 Potential impacts

An assessment of the potential visual impacts of the bridge has been undertaken in accordance with the Roads and Maritime EIA guidelines practice note Landscape character and visual amenity (EIA-N04) as provided in Table 6-21.

Table 6-20: Visual impact checklist

| Criteria | Yes | No | NA |
|---|---|---|---|
| *Is the proposal adjacent to an important physical or cultural element or landscape? (heritage items and areas, distinctive or historic built form, National Parks, conservation areas, scenic highways etc).*<br>The bridge is a listed non-Aboriginal heritage item. As detailed in Section 6.7 the works have been designed to be sympathetic to the heritage of the bridge such that they will not have a significant impact on the heritage fabric or value of the bridge. | X | | |
| *Does the proposal obstruct or intrude upon the character or views of a valued landscape or urban area. For example, local significant topography, a rural landscape or a park, a river lake or the ocean or a historic or distinctive townscape or landmark?* | | X | |
| *Does the proposal require the removal of mature trees or other significant stands of vegetation, either native or introduced?* | | X | |
| *Does the proposal result in large areas of shotcrete visible from the road or adjacent properties?* | | X | |
| *Does the proposal involve new noise walls or visible changes to existing noise walls?* | | X | |
| *Does the proposal involve the removal or reuse of large areas of road corridor landscape, either verges or medians?* | | | X |
| *Does the proposal involve significant changes to the appearance of a bridge (including piers, girders, abutments and parapets) that are visible from the road or residential areas?*<br>Due to the heritage requirements on the works they will be largely indistinguishable from the original bridge work to the average community member. | | X | |
| *If involving lighting, will the proposal create unwanted light spillage on residential properties at night?* | | X | |

| Criteria | Yes | No | NA |
|---|---|---|---|
| *Would any new structures or features being constructed result in over shadowing to adjoining properties or areas?* | | X | |

Based on the analysis provided in Table 6-19 a more detailed analysis of potential land scape and visual impacts is note required however consideration of construction and operational specific impact is provided below.

**Construction**

During construction, the proposal would have short-term aesthetic/visual impact on the visual catchment surrounding the bridge. Visual receptors would include:

- Businesses and residents on the northern and southern foreshores that overlook the bridge and the Nambucca River
- Residents and visitors using the foreshore and the Nambucca River
- Passing motorists.

Aesthetic and visual impacts associated with the proposal would include:

- Presence of machinery
- Temporary site compounds
- Temporary jetty
- Scaffolding and containment controls
- Barges and other vessels
- Temporary site lighting during night works
- Traffic controls
- Light and heavy vehicles transporting equipment, machinery and workers to site.

**Operation**

Following completion of the proposal, the visual amenity of the bridge would be improved as it would be freshly painted and repaired. Areas of visible rust would be rehabilitated and painted. The cracked bridge deck would receive a new top coat and improved guardrails providing an improved aesthetic for drivers. Similar updated to the pedestrian walkway over the bridge would also result in an improved visual appearance of the bridge particularly given the close proximity pedestrians will have the bridge itself.

As a result of the bridge improvement activities the LED lighting system installed by Council would be removed in order to facilitate the required repairs. Transport has committed to installing the lighting system back onto the bridge to ensure that following the repairs there is no loss of lighting functionality on the bridge.

### 6.8.3 Safeguards and management measures

Landscape character and visual impact safeguards are detailed in Table 6-21.

Table 6-21: Landscape character and visual safeguards and management measures

| Impact | Environmental safeguards | Responsibility | Timing |
|---|---|---|---|
| Visual impact | Bridge works are to be planned in accordance with Transport's Bridge Aesthetic Guidelines 2012 | Contractor | Pre-construction |
| Visual impact | All working areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day. | Contractor | During construction |
| Visual impact | Temporary site lighting is to be installed and operated in accordance with AS4282:1997 *Control of the Obtrusive Effect of Outdoor Lighting.* | Contractor | During construction |

| Impact | Environmental safeguards | Responsibility | Timing |
|---|---|---|---|
| Visual impact | Project work sites, including construction areas and supporting facilities (such as storage compounds and offices) are to be managed to minimize visual impacts, including appropriate storage of equipment, parking, stockpile screening and arrangements for the storage and removal of rubbish and waste materials. | Contractor | During construction |
| Lighting | Transport will install a replacement lighting system onto the bridge as soon as practical following the completion of the works. The system will be designed in consultation with Council and will maintain or improve the lighting functionality on the bridge present on the bridge prior to the works. | Contractor | Operation |

## 6.9 Property and land use

### 6.9.1 Existing environment

The proposal is located on Giinagay Way/ Cooper Street and provides the key link between the rural/residential area of Macksville North and the commercial/ residential area of Macksville.

Land use directly adjoining the proposal site includes:

- Residential area to the north
- Adjacent parkland including play equipment and public facilities, pathways and cycleways on both banks
- Commercial development including cafes and the Star Hotel with direct views of the bridge.

### 6.9.2 Potential impacts

**Construction**

During construction of the proposal, impacts on land use would mainly relate to the temporary presence of construction activities and workers. This would include:

- Potential closure/restricted access to Lions Park and park facilities including the boat ramp on the northern side of the bridge
- Single lane or full closure of the bridge during Stages 2, 3 and 4
- Closure of the pedestrian pathways underneath the bridge during Stages 3 and 4
- Closure of part of the waterway during Stages 2 and 4.

In addition, there would be some amenity impacts to adjoining properties during construction. These would include:

- Air quality (impacts addressed in Section 6.12)
- Noise and vibration (impacts addressed in Section 6.5)
- Water quality (impacts addressed in Section 6.2)
- Visual impacts (impacts addressed in Section 6.8).

No property acquisition is required for the proposal.

**Operation**

The aesthetic qualities or value of the locality are not expected to be impacted by the proposal on completion of construction. The character of the general area would largely remain the same post-construction and no significant visual impact is expected.

### 6.9.3 Safeguards and management measures

Property and land use safeguards are detailed in Table 6-22.

Table 6-22: Property and land use safeguards and land use

| Impact | Environmental safeguards | Responsibility | Timing |
|---|---|---|---|
| Property and Land use | The community is to be notified of works and in particular closures to roads, pathways and waterways prior to works commencing. | Contractor | During construction |

## 6.10 Socio-economic

### 6.10.1 Methodology

A specialist socio-economic assessment (SEIA) was completed by GHD (refer to Appendix H) to assess the potential socio-economic impacts of the proposal. The SEIA was undertaken according to the requirement of EIA-N05 Environmental Impact Assessment Practice Note – Socio-economic assessment. A moderate level assessment was undertaken in accordance with the practice note, this included:

- Undertaking a desktop study to define the local and regional SEIA study areas and develop a socio-economic profile of the study areas (refer Table 6-23)
- Considering and incorporating relevant outcomes from Transport's stakeholder and community engagement activities
- Identifying potential social benefits, impacts and opportunities resulting from the proposal and evaluate their significance.
- Developing suitable mitigation measures and management strategies to maximise project benefits and avoid, minimize and manage adverse impacts.

**Socio-economic study areas**

Table 6-23 details the local and regional study areas used in the SEIA.

Table 6-23: SEIA study area definitions

| Study area | Area (ABS Census area) | Interaction with proposal |
|---|---|---|
| Local study area | Macksville Urban Centre and Localities (UCL) | The proposal is located in Macksville UCL. The Macksville community are expected to be affected by impacts and benefits during construction including changes to local amenity and traffic and access changes. |
| Regional study area | Nambucca Valley Local Government Area (LGA) | The proposal site is located in the Nambucca Valley LGA. Communities across the LGA may experience regional impacts and benefits during construction and operation of the proposal. |

**Socio-economic consultation**

A local business survey was developed and administered by Transport for the proposal. The purpose of the survey was to further understand the businesses in the vicinity of the Macksville Bridge and the potential impacts that may be experienced, particularly during construction of the proposal.

The survey was distributed on 7 December 2023, to businesses in the area highlighted in Figure 4-1, and responses were collected on 15 December 2023.

By the end of the survey period, 32 responses were collected by Transport. Businesses who did not submit a response generally provided verbale feedback to Transport staff that they did not think the proposal would have a significant impact on their operations or they did not have any feedback to provide.

A copy of the business survey is provided in Appendix H, with outcomes incorporated throughout this SEIA.

## 6.10.2 Existing environment

**Local study area**

Macksville is located on the Nambucca River in New South Wales (NSW), located approximately 50 kilometres south of Coffs Harbour and 100 kilometres north of Port Macquarie. The surrounding area is predominantly urban, characterised by general residential, commercial core, public recreation, and mixed-use zoning. Macksville is located on Gumbaynggirr Country. The Nambucca River is of importance to the Gumbaynggirr people, and forms part of the creation story. Nambucca derives its name from Gumbaynggirr language which refers to the bend in the Nambucca River, and connecting people from north and south (Nambucca Valley Tourism Assoc., 2019).

Macksville Bridge was built in 1931 and provides the only north-south linkage over the Nambucca River for Macksville. The bridge provides a limited width two lane carriageway and a pedestrian/bike path and is open to all General Access Vehicles.

Nambucca River, and subsequently the Macksville Bridge, separates the suburbs of Macksville, which is the main commercial and residential area, and North Macksville, which contains a smaller number of residential dwellings. The southern extent of the Macksville Bridge connects to River Street foreshore, and the northern end meets the Macksville Lions park.

The Nambucca River is an area valued by locals and visitors for boating, swimming, kayaking, fishing, walking, cycling and picnicking (Nambucca Valley Council, 2022). There are also several community facilities and services located within 400 metres of the bridge including the Nambucca Shire Macksville Library, Macksville Aquatic Centre, LifeBetter Community Services and Macksville Ex-Services Club.

Macksville Police Station is also located close to the bridge, along River Street. The closest fire and Rescue Station is Macksville Fire Station, located 350 metres southwest of the Bridge. Macksville District Hospital is the closest hospital to the Bridge and is approximately 3 kilometres northeast of the town on the eastern side of Pacific Highway. It provides a 24-hour emergency department care and a range of specialist services including emergency medicine, general medicine, general and day surgery/perioperative services, obstetrics/maternity and Tresillian services (NSW Government, 2023).

The analysis of the existing social environment for the local study area relevant to this SEIA are:

- Macksville Bridge provides a key local north-south link over the Nambucca River from Macksville to Macksville North for motorists and pedestrians.
- There is a range of businesses in Macksville including two supermarkets, seven convenience stores, four service industry businesses, eight health/beauty businesses, 11 shop/retail businesses, five office businesses, two utility businesses, 16 restaurants/cafes and four hospitality businesses.
- Macksville has experienced an 8.5 per cent increase in population between 2016 and 2021, with a total population of 3,023 people in 2021.
- Compared to NSW, Macksville has a generally older population, a higher proportion of Aboriginal and Torres Strait Islander residents, but less culturally and linguistically diverse people.
- There are higher rates of unemployment in Macksville compared to Nambucca Valley LGA, with a lower median weekly income for both individuals and households.
- There are high levels of socio-economic disadvantage for both Macksville and the broader Nambucca Valley LGA.
- More than half of residents in Macksville and Nambucca Valley LGA have lived at the same address five years ago, indicating low population mobility.

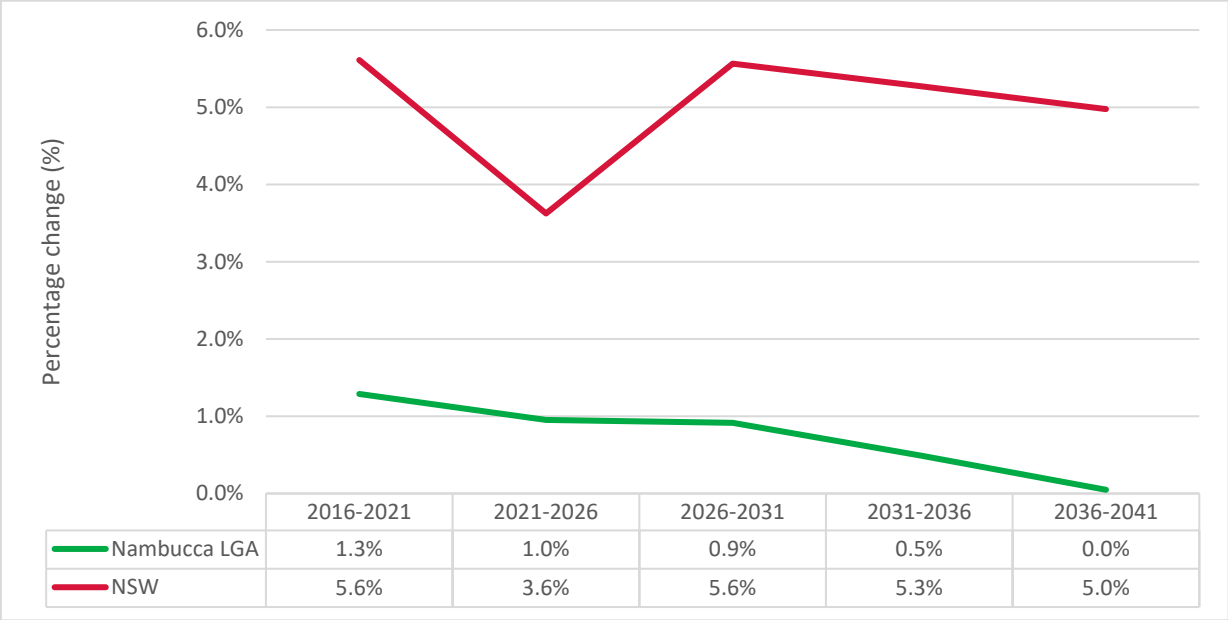
**Regional study area**

Nambucca Valley LGA is located in the Mid North Coast region of New South Wales and is approximately 470 kilometres northeast of Sydney and 440 kilometres south of Brisbane. The LGA is primarily made up of low density and rural residential areas, including the towns of Macksville, Nambucca Heads, Valla Beach, Bowraville and Scotts Head.

Nambucca Valley LGA is a coastal region located approximately 1,491 square kilometres in size and located between Bellingen LGA to the north, Kempsey LGA to the south and Armidale Regional LGA to the west. The Gumbaynggirr people are the Traditional Owners of the land occupied by Nambucca Valley LGA.

The population of Nambucca Valley LGA was 20,407 in 2021, increasing by 6.2 per cent from 2016. The population projection for Nambucca Valley LGA is displayed in Figure 6.2 (NSW Government, 2020). The population of Nambucca LGA is project to increase by 2.4 per cent to 20,314 persons between 2021 and 2041.

Compared to NSW, the population of Nambucca Valley LGA is projected to experience relatively low population growth.




| | 2016-2021 | 2021-2026 | 2026-2031 | 2031-2036 | 2036-2041 |
|---|---|---|---|---|---|
| Nambucca LGA | 1.3% | 1.0% | 0.9% | 0.5% | 0.0% |
| NSW | 5.6% | 3.6% | 5.6% | 5.3% | 5.0% |

Figure 6.2:Population projection (NSW Government, 2020)

The analysis of the existing social environment for the regional study area relevant to this SEIA are:

- In 2021 the population of Nambucca Valley LGA was 20,407 people, a 6.2 per cent population increase since 2016.
- The Pacific Highway provides north-south connectivity through the LGA.
- Nambucca Valley LGA is characterised by its coastline location and rural living.
- The Nambucca Valley Council Community Strategic Plan identifies the community aspirations to be caring for community, caring for environment, living well and promoting prosperity (Nambucca Valley Council, 2022).
- The top three industries in the 2021 Census for Nambucca Valley LGA were health care and social assistance, education and training and retail trade. Tourism is also a key industry and is identified by the Nambucca Valley Council as a strategic growth area.
- There are higher rates of unemployment within the LGA compared to NSW.

**Businesses surveys**

The following types of businesses responded to the business surveys:

- 16 retail businesses
- Seven health / beauty
- Four service providers
- Four cafes / restaurants
- One accommodation provider.

These businesses have a range of opening hours, days, delivery times and peak operating times. Most businesses receive deliveries during the week from Monday to Friday via van / truck or courier. The proportion of respondents who indicated that they receive daily deliveries was 21.9 per cent (7 respondents).

All businesses who responded to the survey noted that their employees drive to work, and park either on the street in Macksville town centre or in dedicated parking areas. Of the survey respondents, two businesses noted that some employees park in the car park on the northern side of the Macksville Bridge then walk to the town centre to access their place of work. Businesses who responded to the survey indicated staff numbers between two and 50 employees, with 40.6% of businesses having between five and 20 employees.

The outcomes of the business surveys have been used in the identification of severity and magnitude of potential impact from the proposal as identified in Section 7.10.3.

### 6.10.3 Potential impacts

**Business survey timing and context**

The business survey results provided in the following sections highlights feedback received during the development of the proposal and notably included communication with business regarding the traffic management measures that were proposed at the time of the survey. This provided Transport with a baseline proposal to present to business and provide feedback. Subsequent to receiving this feedback Transport was then able to adjust proposed traffic management measures to address business concerns where practical. For example, two key themes raised in the feedback included:

- Temporary traffic lights in Giinagay Way located closer to the Wallace Street intersection would cause unacceptable impacts to businesses on Giinagay Way between River Street and Wallace Street
- Banning the right turns at the Wallace Street traffic light would be to disrupting to local traffic
- Total closure of River Street, west of the bridge, would cause access impacts to business in this location.

As a result of this feedback the final traffic management measures proposed by the project have:

- Placed temporary traffic lights as close to the bridge as possible to minimise impact further south on Giinagay Way
- Removed proposed changes to the operation of the Wallace Street and Giinagay Way intersection
- Amended River Street impacts to maintain a single open lane along River Street at all times.

As a result, the impact assessment provided below assesses the residual impacts subsequent to the implementation of changes made to the project as a result of the feedback received during the business survey and stakeholder consultation.

**Business survey results**

Of the 55 surveys issued only 32 responses were received with the remainder indicating verbally the proposal was unlikely to impact their business. The results details below are a summary of the results received noting that not all survey responses answered all survey questions. This is a summary of survey question responses which are statistically significant enough to identify.

As shown in Figure 6.3, 53.1 per cent of respondents (17) indicated that the proposal may deter customers from accessing their businesses.

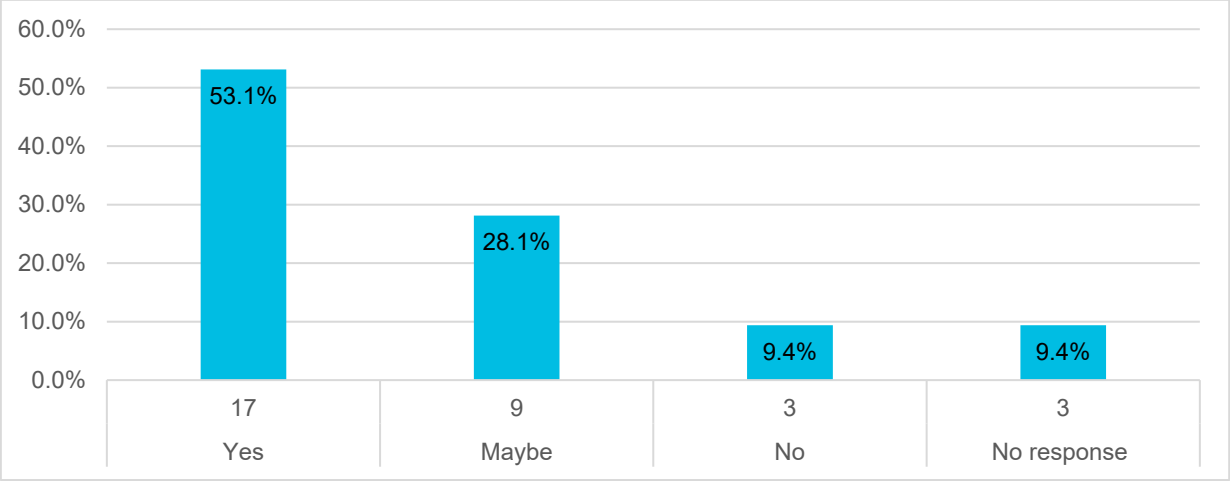



Figure 6.3:Do you think the project will deter customers from accessing your business?

Of survey respondents, 31.3 per cent (10) indicated that they are concerned about general loss of customers due to traffic disruptions during construction of the proposal (Table 6-24). When asked to rate the impact of the proposal on their business, 34.4 per cent of respondents indicated that the impact would be high or very high.

Where businesses specified why they believe that they would potentially lose customers and sales, responses included:

- Changes to / loss of access
- Disruptions to parking
- Increased traffic and travel time
- Reduced tourism traffic
- Patrons going to competitors that are easier to access.

Table 6-24: How will your business be impacted due to the proposal

| How will your business be impacted due to proposed project? | Number of responses | Percentage |
|---|---|---|
| General loss of customers (inconvenience, lack of foot traffic/passersby) | 10 | 31.3% |
| Loss of sales and customers due to difficulties in access | 8 | 25.0% |
| Loss of sales and customers due to decreased parking | 6 | 18.8% |
| Increased traffic | 6 | 18.8% |
| Impacts on deliveries (perishable goods and cattle) from increased travel times | 5 | 15.6% |
| Loss of sales and customers due to increased travel times | 2 | 6.3% |
| Loss of sales and customers due to reduction in tourist traffic | 2 | 6.3% |
| Loss of sales and customers to competitors' businesses | 2 | 6.3% |
| Delayed business and shift requirements due to people arriving late for appointments | 2 | 6.3% |
| Little to no impacts | 2 | 6.3% |
| Impacts on staff (travel, incoming deliveries, increased shifts) | 1 | 3.1% |
| Noise impacts | 1 | 3.1% |

Notwithstanding concerns around customer loss, 43.8 per cent of respondents indicated that they expect most / all customers to continue to visit their business during proposed project works, with 28.1 per cent of respondents noting that although some customers would continue to visit their business, they may be impacted by competitors nearby (Figure 6.4).

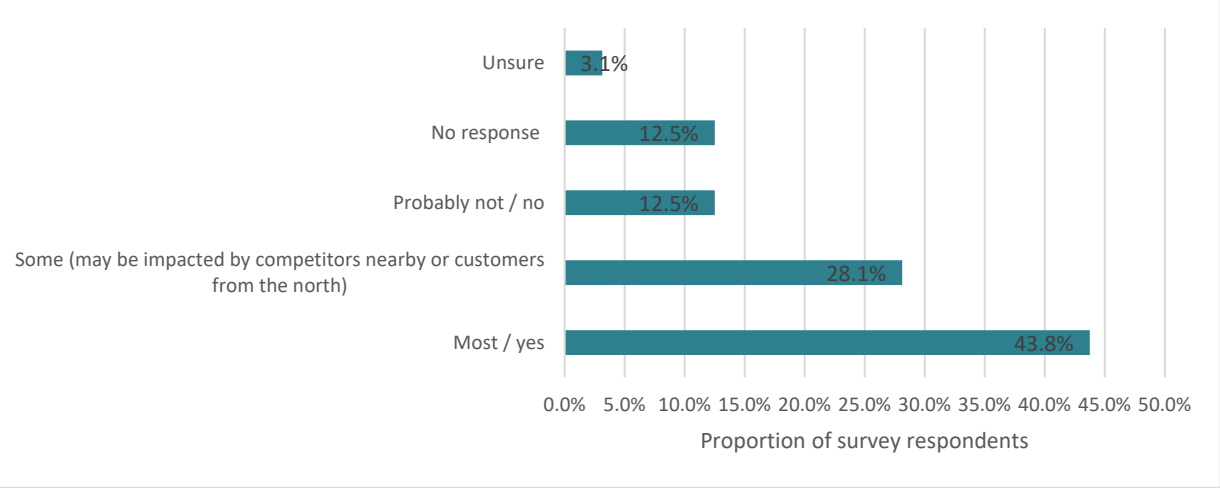



Figure 6.4: Do you think your customers will continue to visit your business if the proposed project is implemented?

Of survey respondents, 43.8 per cent of businesses indicated that they believe they would lose up to 25 per cent of revenue as a result of the proposal, with 18.8 per cent indicating they believe they would lose between 26 per cent and 50 per cent of their revenue (Figure 6.5).

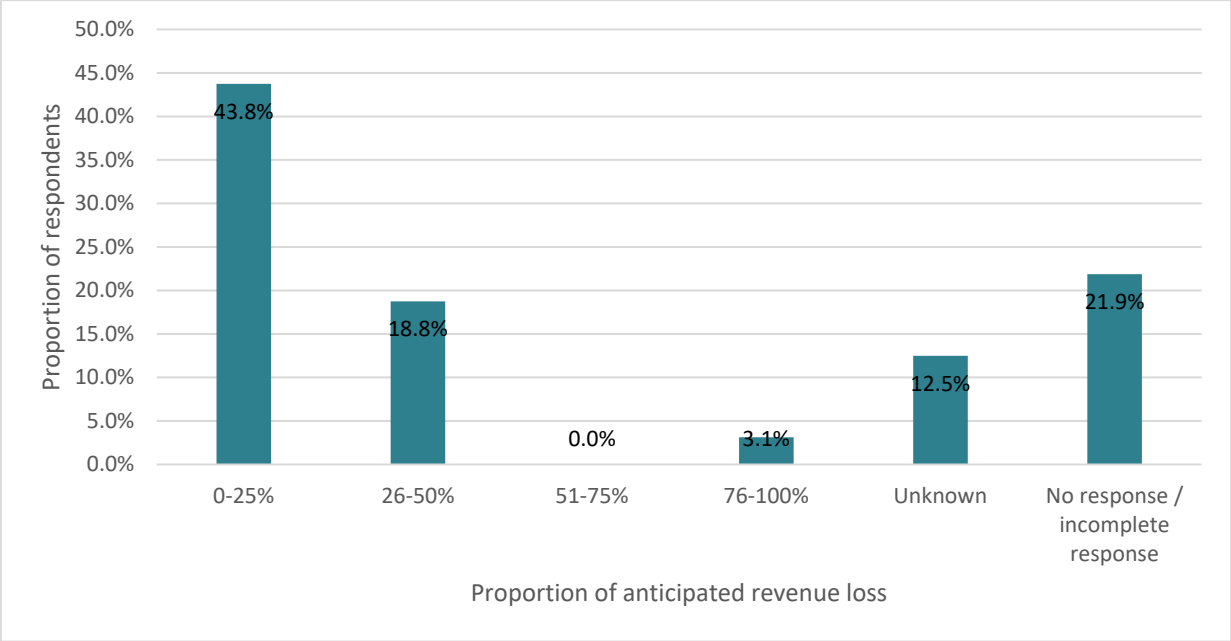



Figure 6.5: What proportion of your daily customers do you think you might lose as a result of the proposed project?

### Construction

This section assesses the socio-economic impacts associated with the construction of the proposal (see Table 6.25). The sensitivity and magnitude have been determined in accordance with the methodology outlined in Appendix H. Table 6.25 contains only construction impacts identified to have a potential negative impact of moderate or higher. Appendix H contains a full list of potential impact including those of low impact or positive impact.

Table 6.25: Socio-economic impact summary – construction

| Change as a result of the proposal | Summary of the potential impact | Nature, type and duration of impact | Affected stakeholders | Sensitivity | Magnitude | Level of significance |
|---|---|---|---|---|---|---|
| Full bridge closures requiring alternative routes | Macksville Bridge will be closed at times during the night to undertake repairs and maintenance work. During periods of full bridge closure, people will be required to utilise an alternate route. For those travelling into Macksville town centre from the north, they will need to travel via the Pacific Highway. For those wanting to travel from south of the river to the north, they will also need to travel via Pacific Highway. These detours could add up to 18 minutes of travel.<br>Full bridge closures are likely to occur on multiple occasions, including:<br>• Stage 2 – approximately 20 nights consecutively (load limited during the day – full closure to heavy vehicles)<br>• Stage 4 – approximately five nights consecutively over a two-week period. | Negative<br>Direct<br>Short term | Road users who would normally use Macksville Bridge, including locals and visitors | Moderate<br>Some residents, business owners and employees who regularly use Macksville Bridge may have a number of vulnerabilities, while some people may absorb or adapt more easily to the change than others. Some may be more sensitive than others, such as those who travel over the bridge more frequently than others, particularly given the alternate route may add an additional 23 minutes of travel. | Moderate<br>Full bridge closures will be limited to the extend practical and concentrated over a short period to reduce prolonged impacts. | Moderate |
| Potential impacts in North Macksville | There are limited services and facilities in North Macksville, with residents likely accessing community services and facilities across the bridge in Macksville. Residents in North Macksville are | Negative<br>Direct<br>Short term | Residents of North Macksville | Moderate<br>Residents of North Macksville may be sensitive to increased travel times (~2min) to | Moderate<br>Impacts would extend over the construction phase (although partial and full lane closures | Moderate |

| Change as a result of the proposal | Summary of the potential impact | Nature, type and duration of impact | Affected stakeholders | Sensitivity | Magnitude | Level of significance |
|---|---|---|---|---|---|---|
| | likely to be more sensitive to increased travel time due to delays and detours as there is a high-level dependence on the Macksville Bridge for travel to and from the town including for pedestrian traffic. Limiting full closure to the extent possible and maintaining access to the extent possible with single lane operations has reduced total impacts. | | | access services, and as such may take time to adapt to this change. | will vary during this time) and potentially impact a large number of residents. | |
| Emergency services | Macksville Ambulance Station is located in North Macksville and the Macksville Police Station is located in Macksville to the south of the bridge.<br><br>Like all vehicles emergency services will experience minor delays during single lane operation. Consultation has been completed with emergency service providers.<br><br>Emergency services will be allowed access over the bridge during the majority of the full bridge closures. If there is a small period where this is not applicable transport will discuss further with emergency providers closer to the time and may look to enter 'users pay' arrangements etc. | Negative<br><br>Direct<br><br>Short term | Emergency response services | Moderate<br><br>Emergency services have a high level of sensitivity to reduced or no access at times to the north / south of Macksville. | Moderate<br><br>Impacts would extend over the construction phase (although partial and full lane closures will vary during this time). | Moderate |
| Delays to public transport services due to construction activities | During periods of full closure and single lane operation during construction, there will be disruptions to the bus routes which travel across the Macksville Bridge (routes 358, 356, 360, 351 and 352). Bus routes connect Macksville with | Negative<br><br>Direct<br><br>Short term | Bus passengers | Moderate<br><br>Public transport is often used by vulnerable community members, such as younger people, | Moderate<br><br>Impacts would extend over the construction phase (although partial and full lane closures | Moderate |

| Change as a result of the proposal | Summary of the potential impact | Nature, type and duration of impact | Affected stakeholders | Sensitivity | Magnitude | Level of significance |
|---|---|---|---|---|---|---|
| | other regional centres including Nambucca Heads and Coffs Harbour. Buses may be required to seek an alternate route during construction, which will increase travel time for passengers. Full bridge closure will be restricted to night times when possible, avoiding impacts to most bus services.<br><br>Increased time spent travelling may cause delays in getting home, to work, or other commitments. This may be inconvenient for some public transport users and cause frustration. | | | people who experience disability, older people and people with mobility issues, people with low levels of English and people with low incomes. These groups may experience a greater level of sensitivity to changed public transport access. | will vary during this time). | |
| Changes to pedestrian facilities and active transport routes | During construction the pedestrian access and user paths over and under the bridge will be partially or fully closed at times, mainly at night.<br><br>Partial closure may result in pedestrians and cyclists experiencing minor delays if they are required to use a pathway along one side of the bridge. Full closures are expected to deter people from crossing from north to south as the detour is beyond a safe and reasonable walking/cycling distance although full closure would concentrate on night closures when pedestrian are less likely to be using the bridge. | Negative<br><br>Direct<br><br>Temporary | Pedestrians | Moderate<br><br>Some people have multiple vulnerabilities and may be less able to adapt to this change. | Moderate<br><br>While changes are expected to be limited to a small geographical area, impacts would extend over the construction phase and potentially impact a large number of pedestrians. Limiting full closure to night times will help high magnitude of impacts. | Moderate |

| Change as a result of the proposal | Summary of the potential impact | Nature, type and duration of impact | Affected stakeholders | Sensitivity | Magnitude | Level of significance |
|---|---|---|---|---|---|---|
| | Outcomes of the Early Consultation Community Survey undertaken by Transport found that some residents in North Macksville do not have a vehicle and therefore heavily rely on the pedestrian facilities over the Macksville bridge to access goods and services in the town centre.<br><br>Vulnerable groups may find changes to pedestrian facilities or footpaths confusing and difficult to navigate. This may lead to actual or perceived safety concerns. This may deter some people from using these paths, and disrupt lifestyles (e.g. daily tasks like going to the shops). | | | | | |
| Combined changes to parking, traffic, and access from construction activities may deter customers at some businesses. | The Local Business Survey found that most employees of businesses in the Macksville town centre either utilise street parking or dedicated parking areas. As detailed in Appendix H, businesses who responded to the survey are concerned around disruptions to parking and subsequent impacts to customer access and patronage. The project has been amended to reduce or remove these impacts.<br><br>Increased noise and dust may be disruptive to some businesses in close proximity to construction activities, particularly for businesses located on the southern extent of the Macksville Bridge, along River Street. Some customers may be deterred from using outdoor eating areas at food and beverage | Negative<br><br>Indirect<br><br>Short term | Businesses | Moderate<br><br>Some businesses have a moderate level of sensitivity to potential reduction in customer visitation and income. | Moderate<br><br>Changes would be short term during construction but may affect a large number of businesses in Macksville. | Moderate |

| Change as a result of the proposal | Summary of the potential impact | Nature, type and duration of impact | Affected stakeholders | Sensitivity | Magnitude | Level of significance |
|---|---|---|---|---|---|---|
| | businesses in proximity to construction works.<br><br>These factors may result in potential customers being deterred from accessing some businesses in in Macksville during construction. Business owners and employees may also experience delays in travelling to work. | | | | | |
| Increased travel times for oversized vehicles during construction may impact on the delivery of goods for local businesses. | OSOM vehicle restrictions would occur over the 3-year construction period.<br><br>Heavy vehicles will be required to detour to the Pacific Highway during these times. This will result in increased travel time for these vehicles of approximately 18 minutes.<br><br>Businesses in Macksville who rely on large vehicles to transport goods may experience delays in deliveries due to detours and increased transport time.<br><br>Outcomes from the Local Business Survey found that most respondents receive deliveries during the week from Monday to Friday via van / truck or courier, with 21.9 per cent of respondents (7 businesses) indicating that they receive daily deliveries. | Negative<br><br>Direct<br><br>Short term | Businesses | Moderate<br><br>Some businesses have a moderate level of sensitivity to delays in delivery times for goods. | Moderate<br><br>Changes would be short term but may affect a moderate number of businesses which require heavy vehicle access over Macksville Bridge. | Moderate |

### Operation

This section assesses the socio-economic impacts associated with the operation of the proposal (see Table 6.26). The sensitivity and magnitude have been determined in accordance with the methodology outlined in Appendix H. Table 6.26 identifies that once operational the proposal is only likely to have ongoing positive impacts on the community.

Table 6.26: Socio-economic impact summary – operation

| Change as a result of the proposal | Summary of the potential impact | Nature, type and duration of impact | Affected stakeholders | Sensitivity | Magnitude | Level of significance |
|---|---|---|---|---|---|---|
| Improved safety of Macksville Bridge | The proposed remediation works will improve the overall safety and longevity of Macksville Bridge for road users, including pedestrians and cyclists. This would broadly benefit local and regional communities, including residents, businesses and tourists. | Positive<br>Direct<br>Long term | Local residents<br>General road users | Moderate<br>Because the Macksville Bridge is currently in need of immediate repairs, local residents are likely to be sensitive to changes. | Moderate<br>The changes would be long term, and would be somewhat noticeable for local residents. | Moderate (Positive) |
| Improved pedestrian facilities | The proposal will include maintenance to the existing walkway along Macksville Bridge, which may improve feelings of safety for more vulnerable pedestrians, including those who rely on active travel and people with mobility difficulties. | Positive<br>Direct<br>Long term | Local residents | Moderate<br>Because the Macksville Bridge is the only pedestrian connectivity between Macksville and North Macksville, local residents are likely to be sensitive to changes. | Low<br>Although this is a permanent change, it is not expected that the change would be discernible from baseline conditions. | Moderate-Low (Positive) |

| Change as a result of the proposal | Summary of the potential impact | Nature, type and duration of impact | Affected stakeholders | Sensitivity | Magnitude | Level of significance |
|---|---|---|---|---|---|---|
| Changes to visual amenity for local residents | The proposed remediation works involve painting of Macksville Bridge. Residents of Macksville may experience improved visual amenity as a result of the bridge painting, in particular those residents located along the Nambucca River in North and South Macksville. Transport will also replace decorative bridge lighting resulting in improved lighting displays on the bridge at night.<br><br>The project will ultimately result in the restoration, visually as well as structurally, of a locally significant heritage item. | Positive<br><br>Direct<br><br>Long term | Local residents | Low<br><br>Because the works are to an existing bridge there will be minimal visual change for receptors. | Moderate<br><br>The changes would be long term and would be somewhat noticeable for local residents. | Moderate-Low (Positive) |

### 6.10.4 Safeguards and management measures

Socio-economic safeguards are detailed in Table 6-27.

Table 6-27: Socio economic safeguards and management measures

| Impact | Environmental safeguards | Responsibility | Timing |
|---|---|---|---|
| Impacts to local residents and businesses | The Communication Plan (CP) (March 2023) will be revised as necessary and implemented as part of the Construction Environmental Management Plan (CEMP) to ensure provision of timely and accurate information to the community and stakeholders during construction.<br>The CP will include (as a minimum):<br>• Mechanisms to provide details and timing of proposed activities to affected stakeholders (residents, local businesses, organisations, emergency services and river users etc.) and distribution of information about the proposal<br>• Toll free number and email address for enquiries and complaints<br>• How the project webpage will be maintained for the duration of the proposal<br>• A complaints handling procedure<br>• Consultation activities to be carried out. | Transport | Pre-construction/ construction |
| Impacts to local residents and businesses | Temporary construction traffic staging to consider impacts to local residents during construction, particularly in North Macksville, during periods of full bridge closure as well as maintaining safe access during single lane operation. | Contractor | Construction |
| Employment and business opportunities | The proposal is to prioritise opportunities for Indigenous workers and procurement in line with the NSW's Governments Aboriginal Procurement Policy and Transport's Aboriginal Participation Strategy. | Contractor | Pre-construction |

## 6.11 Waste

### 6.11.1 Existing environment

The current operation of the bridge does not produce any significant or ongoing waste streams. Due to the current condition of the bridge more frequent maintenance works have been required over recent years which have resulted in small amounts of:

- Liquids wastes. E.g from paints and coating that have been applied to the bridge
- Solid wastes. E.g metal offcuts from structure repairs.

### 6.11.2 Potential impacts

**Construction**

to include:

- Redundant signage
- Packaging materials (from construction activities, materials, equipment, etc), and off-cuts
- Blast media contaminated with paint containing chromium
- Liquid paint waste
- Liquid waste from portable toilets (including toilets on board barge)
- Barge wastewater possibly including grey-water, bilge-water and contaminated ballast-water (where relevant)
- Left over concrete from pier pours
- PPE waste and overalls from blasting and other activities
- Waste water from laundry and decontamination unit during blasting and painting
- Old steel sections from bridge repairs
- General construction waste.

Additional waste is not expected to be generated during proposal operation.

**Operation**

Once operational there is not expected to be any significant waste streams.

### 6.11.3 Safeguards and management measures

Waste safeguards are detailed in Table 6-28.

Table 6-28: Waste safeguards and management measures

| Impact | Environmental safeguards | Responsibility | Timing |
|---|---|---|---|
| Waste | Suspected chromium containing paint materials are to be managed in accordance with the Australian Standard AS/NZS 4361.1:2017 Guide to hazardous paint management Lead and other hazardous metallic pigments in industrial applications | Contractor | During construction |
| Waste | Resource management hierarchy principles are to be followed:<br>• Avoid unnecessary resource consumption as a priority.<br>• Avoidance is followed by resource recovery (including reuse of materials, reprocessing, recycling and energy recovery).<br>• Disposal is undertaken as a last resort. (in accordance with the Waste Avoidance & Resource Recovery Act 2001). | Contractor | During construction |

| Impact | Environmental safeguards | Responsibility | Timing |
|---|---|---|---|
| Waste | A Waste Management Plan must be prepared that follows the Roads and Maritime Services Technical Guide: Management of road construction and maintenance waste and the requirements of the AS/NZS 4361.1:2017 Guide to hazardous paint management Lead and other hazardous metallic pigments in industrial applications | Contractor | During construction |
| Waste | All wastewater from vessels is to be discharged at an approved vessel wastewater disposal facility. No vessel wastewater is to be discharged (ie pumped out) directly into the water or onto any land adjacent. | Contractor | During construction |
| Waste | Hazardous waste:<br>• Must be temporary stored in the secured site compound in sealed and labelled containers.<br>• Containers must be located in a self-safe storage container and double bunded and sign posted as contaminated waste.<br>• Treatment of hazardous waste is to be off site at a licenced facility. | Contractor | During construction |
| Waste | A waste transport licence and waste tracking is required for hazardous waste. | Contractor | During construction |

## 6.12 Other impacts

### 6.12.1 Existing environment and potential impacts

Other impacts safeguards are detailed in Table 6-29.

Table 6-29: Other potential impacts

| Environmental factor | Existing environment | Potential impacts |
|---|---|---|
| Air quality | According to IQAir (https://www.iqair.com/au/), which monitors air quality using satellite data where ground based monitoring is not available, the air quality in Macksville is 'good'. With the relocation of the Pacific Highway, it is expected that air quality would continue to improve with decreased usage of the bridge and subsequent reduced vehicle emissions. | Construction activities would result in increased emissions from vehicle, plant and equipment. However it is unlikely volumes would be significant when construction duration is considered.<br>Dry abrasive blasting creates paint dust, which is likely to be contaminated with chromium. A negative pressure containment system would be established around full bridge spans during blasting and painting to reduce the potential for emission of this dust to the surrounding environment. The containment system would meet the requirements of AS/NZS 4361.1:2017 Guide to hazardous paint management Lead and other hazardous metallic pigments in industrial applications, and as such any impact from dry abrasive blasting is expected to be negligible.<br>Minor soil disturbance may also occur, which could result in the creation of dust. However significant excavation is not proposed so the generation of dust, if it occurs, would be minimal. |

| Environmental factor | Existing environment | Potential impacts |
|---|---|---|
| | | No ongoing impacts to air quality are expected during proposal operation. |
| Utilities | Public utilities and associated infrastructure expected to occur within the proposal site includes but is not limited to:<br>• Electricity supply infrastructure and street lighting<br>• Stormwater<br>• Telecommunications<br>• Water and sewer. | Potential impacts to utilities could occur where infrastructure is accidently disturbed during construction activities.<br>Transport has identified that some council lighting in Lions Park may require relocation during construction. Lighting would be reinstated at the completion of works.<br>No impact to utilities is expected during proposal operation. |
| Hazard and risks | Hazards and risks relating to the construction of the proposal would include:<br>• Spills or leakage of contaminates such as fuels, chemicals and hazardous substances entering surface and groundwater or contaminating soils<br>• Discharge of turbid run-off, resulting in sedimentation of waterways<br>• Encountering unexpected utilities or contaminated material<br>• Spread of noxious weeds<br>• Flooding during extreme rain events<br>• Fire from offsite or caused as a result of construction activities such as hot works<br>• Changed traffic conditions leading to incidents. | These potential impacts have been addressed in other sections of this REF, including:<br>• Biodiversity (section 6.1)<br>• Hydrology, flooding and water quality (section 6.2)<br>• Soils (section 6.3)<br>• Traffic and transport (section 6.4).<br>There is a small risk of fire resulting from hot works during construction. However, due to the proposal site location within a largely urban setting, there is a reduced likelihood of ignition and spread of any fire.<br>No additional hazards and risks are expected during proposal operation. |

### 6.12.2 Safeguards and management measures

Safeguards and management measures for other identified impacts are described in Table 6-30.

**Table 6-30: Other impacts Safeguards and management measures**

| Impact | Environmental safeguards | Responsibility | Timing |
|---|---|---|---|
| Air quality | The CEMP is to include the following measures to manage air quality impacts:<br>• Mitigation and suppression measures to be implemented including the management of stockpiles or areas that may generate dust<br>• Work is to cease during strong winds or other adverse weather conditions<br>• Vegetation or other materials are not to be burnt on site | Contractor | Detailed design / Pre-construction |

| Impact | Environmental safeguards | Responsibility | Timing |
|---|---|---|---|
| | • Vehicles transporting waste or other materials that may produce odours or dust are to be covered during transportation<br>• Management and monitoring of emissions resulting from dry abrasive blasting, including the containment system, would meet the requirements of AS/NZS 4361.1:2017 Guide to hazardous paint management Lead and other hazardous metallic pigments in industrial applications<br>• Containment system to be checked regularly and any breaches promptly repaired. | | |
| Utilities | Prior to the commencement of works:<br>• If utilities are to be impacted by the proposal this would be undertaken in accordance with design and construction methods approved by the relevant utility stakeholder. | Contractor | Detailed design / Pre-construction |
| Hazards and risks | The CEMP would include the following measures:<br>• Details of hazards and risks associated with all construction activities<br>• Measures to be implemented during construction to minimise these risks<br>• Details of record keeping for materials present on the site, material safety data sheets, and personnel training<br>• A program of monitoring to assess performance in managing identified risks<br>• Contingency measures to be implemented in the event of unexpected hazards, risks arising and emergency situations.<br>Measure will be prepared in accordance with relevant guidelines and standards, including relevant Safe Work Australia Codes of Practice, and EPA publications. | Contractor | Detailed design / Pre-construction |

## 6.13 Cumulative impacts

### 6.13.1 Study area

The cumulative assessment has included the proposal site and the broader locality including Macksville and Macksville North.

### 6.13.2 Broader program of work

This proposal is not part of a broader program of work.

### 6.13.3 Other projects and developments

A review of the NSW Planning Portal and council website has been completed to identify major projects within the study area. These are summarised in Table 6-31.

Table 6-31: Past, present and future projects in the study area

| Project | Construction impacts | Operational impacts |
|---|---|---|
| MOD 1 – Administrative Change<br>(DA378-8-2023-Mod-1) | N/A | N/A |

| Project | Construction impacts | Operational impacts |
|---|---|---|
| Project has been approved | | |
| MOD 2 _ Administrative Change<br>(DA378-8-2003-Mod-2)<br>Project is undetermined | N/A | N/A |
| Macksville Subdivision – Master Plan<br>(DA24-5-2005)<br>Project has been refused | N/A | N/A |
| Development Application – 4 lots<br>(DA378-8-2003)<br>Project has been approved | Construction impacts may include:<br>• Construction noise<br>• Impacts to air quality<br>• Impacts to surface water and groundwater. | Operational impacts may include:<br>• An increase in traffic<br>• An increase in additional construction impacts associated with future development of the subdivided lots. |
| Mod 8 – North Macksville Ramps<br>(MP07_0112-Mod-8)<br>Project has been approved | Construction impacts may include:<br>• Visual amenity<br>• Biodiversity<br>• Noise and vibration<br>• Minor impacts to heritage, landscaping, hydrology and land use. | Operational impacts may include:<br>• Visual amenity<br>• Noise and vibration<br>• Biodiversity. |
| New Macksville Hospital – Modification 1 Lower Building Height by 250mm<br>(SSD-9103-Mod-1)<br>Project has been approved | N/A | N/A |
| Macksville Hospital Redevelopment<br>(SSD-9103)<br>Project has been approved | Construction impacts may include:<br>• Noise<br>• Bushfire risk<br>• Increased traffic<br>• Flooding<br>• Visual impacts<br>• Air quality. | Operational impacts may include:<br>• Bushfire risk<br>• Increased traffic<br>• Flooding<br>• Visual impacts. |

### 6.13.4 Potential impacts

The impacts of the projects in Table 6-31 were considered with key impacts of the proposal to identify potential cumulative impacts for the proposal. It is not considered that the proposal along with any other project has the potential to result in additional impacts to those identified in Sections 6.1 to 6.12 of this REF. No additional safeguards or management measures are considered necessary to manager cumulative impacts.

# 7. Environmental management

This chapter describes how the proposal will be managed to reduce potential environmental impacts during detailed design, construction and operation. A framework for managing potential impacts is provided. A summary of site-specific environmental safeguards is provided and the license and/or approval requirements required prior to construction are listed.

## 7.1 Environmental management plans

Safeguards and management measures have been identified in the REF in order to minimise adverse environmental impacts, including social impacts, which could potentially arise as a result of the proposal. Should the proposal proceed, these safeguards and management measures would be incorporated into the detailed design and applied during the construction and operation of the proposal.

A Construction Environmental Management Plan (CEMP) will be prepared to describe the safeguards and management measures identified. The CEMP will provide a framework for establishing how these measures will be implemented and who would be responsible for their implementation.

The CEMP will be prepared prior to construction of the proposal and must be reviewed and certified by the Transport for NSW Environment and Sustainability Officer, Northern Region, prior to the commencement of any on-site works. The CEMP will be a working document, subject to ongoing change and updated as necessary to respond to specific requirements. The CEMP would be developed in accordance with the specifications set out in the: *QA Specification G36 - Environmental Protection (Management System)*, *QA Specification G38 - Soil and Water Management (Soil and Water Plan)*, *QA Specification G10 - Traffic Management*.

## 7.2 Summary of safeguards and management measures

Environmental safeguards and management measures outlined in this REF will be incorporated into the detailed design phase of the proposal and during construction and operation of the proposal, should it proceed. These safeguards and management measures will minimise any potential adverse impacts arising from the proposed works on the surrounding environment. The safeguards and management measures are summarised in Table 7-1.

Table 7-1: Summary of safeguards and management measures

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|---|---|---|---|---|
| 1 | Biodiversity | Mangroves are located within both compound options 1 and 2. It has been assumed that no mangroves would be removed or impacted during the construction works. If mangroves are needed to be disturbed this will require additional approval and controls to be in place. | Contractor | Detailed design / pre-construction/ Construction |
| 2 | Biodiversity | If unexpected threatened fauna or flora species are discovered, stop work immediately and follow Transport's Unexpected Threatened Species Find Procedure in Transports Biodiversity Guidelines 2011-Guide 1 (Pre-clearing process). | Contractor | During Construction |
| 3 | Biodiversity | All activities are to minimise disturbances to shallow water habitats under, and in the immediate vicinity of water based structures, including disturbance of seabed sediments and smothering habitats from propeller strike or excessive propeller wash. | Contractor | During Construction |
| 4 | Biodiversity | Measures to further avoid and minimise the construction footprint and native vegetation or habitat removal are to be investigated during detailed design and implemented where practicable and feasible. | Contractor | During Construction |
| 5 | Water quality | A site-specific Erosion and Sediment Control Plan (ESCP) is to be prepared and implemented as part of the CEMP.<br>The plan is to identify detailed measures and controls to be applied to minimise erosion and sediment control risks including (where relevant) but not limited to: runoff, diversion and drainage points, scour protection; stabilising disturbed areas as soon as possible, fencing and staged implementation arrangements.<br>The plan is to also include arrangements for managing wet weather events, including monitoring of potential high-risk events (such as storms) and specific controls and follow-up measures to be applied in the event of wet weather.<br>Work is to only commence once all erosion and sediment controls have been established. The controls are to be maintained in place until the work is complete and all exposed erodible materials are stable. | Contractor | Pre-construction |
| 6 | Water quality | Erosion and sedimentation controls are to be checked and maintained on a regular basis (including clearing of sediment from behind barriers) and records kept and provided on request. | Contractor | During construction |
| 7 | Water quality | Works is to cease and all sediment control measures checked and repaired or re-installed (if required) if heavy rainfall is forecast. | Contractor | During construction |
| 8 | Water quality | Visual monitoring of local water quality (ie turbidity, hydrocarbon sills/ slicks) is to be undertake on a regular basis to identify any potential spills or deficient erosion and sediment controls. | Contractor | During construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|---|---|---|---|---|
| 9 | Water quality | Construction vessels (including barges) are only to be used at suitable tides when no less than 60 mm clearance is available between the underside of the vessel and the bed of the waterway. | Contractor | During construction |
| 10 | Flooding | An emergency response plan is to be prepared for flood events, which would include:<br>• Responsibility for monitoring flood threat/ flood warning information and how it is to be done<br>• Training for staff on evacuation<br>• Demonstrate that specific equipment for evacuation is readily available<br>• Detail where compound site equipment, waste, materials, site sheds etc are to be relocated prior to flood. | Contractor | Pre-construction |
| 11 | Water quality | Staff are to be made aware that the works involve the removal of chromium based paint and the impacts associated with the release of this hazardous waste to the environment. | Contractor | Pre-construction |
| 12 | Flooding | Weather conditions are to be monitored closely at all times. Check the BoM site at least daily for updates. In the event of potential flooding, remove all contaminated waste and dispersible material from flood prone areas. | Contractor | During construction |
| 13 | Water quality | A spill containment kit is to be available at all times. All personnel are to be made aware of the location of the kit and trained in its effective deployment. | Contractor | During construction |
| 14 | Water quality | The containment structure for paint removal is to be constructed to capture any potential release of paint containing chromium in accordance with the requirements of *AS 4361.1:2007 Guide to hazardous paint management – Part 1: Lead and other hazardous metallic ingredients in industrial applications*. | Contractor | During construction |
| 15 | Water quality | The containment system is to be checked regularly and any breaches promptly repaired. | Contractor | During construction |
| 16 | Water quality | All waste captured from the cleaning and painting operation in the containment system is to be disposed of at a waste treatment facility licenced to receive chromium contaminated waste. | Contractor | During construction |
| 17 | Water quality | If a spill occurs Transport's *Environmental Incident Classification and Reporting Procedure* is to be followed and Transport's Contract Manager notified as soon as practicable. | Contractor | During construction |
| 18 | Water quality | Required fuels and other liquids are to be stored in self-bunded chemical storage containers. | Contractor | During construction |
| 19 | Water quality | Refuelling of plant and equipment is to occur in impervious bunded areas located a minimum of 50 m from drainage lines or waterways or in double bunded areas when within 50 m of a waterway. | Contractor | During construction |
| 20 | Water quality | Refuelling of plant and equipment on barges is to occur within a double-bunded area. | Contractor | During construction |
| 21 | Water quality | Unnecessary storage of fuels, lubricants or other compounds onsite are to be avoided. | Contractor | During construction |
| 22 | Water quality | Cleaning of tools and equipment is to occur within a designated bunded wash-down bay. | Contractor | During construction |
| 23 | Water quality | Water utilised for cleaning of tools is to be minimised and obtained from the town water supply. | Contractor | During construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|---|---|---|---|---|
| 24 | Water quality | Potable water is to be used for wash down. | Contractor | During construction |
| 25 | Contamination | If contaminated areas are encountered during construction, appropriate control measures will be implemented to manage the immediate risks of contamination. All other works that may impact on the contaminated area will cease until the nature and extent of the contamination has been confirmed and any necessary site-specific controls or further actions identified in consultation with the Transport Senior Manager Environment and Sustainability and/or EPA. | Contractor | Pre-construction |
| 26 | Contamination | A site-specific emergency spill plan will be developed and include spill-management measures in accordance with the Transport Code of Practice for Water Management (RTA, 1999) and relevant EPA guidelines. The plan will address measures to be implemented in the event of a spill, including initial response and containment, notification of emergency services and relevant authorities (including Transport and EPA officers). | Contractor | Pre-construction |
| 27 | Erosion and sedimentation | A site-specific ESCP is to be prepared and implemented as part of the CEMP.<br>Erosion and sediment control measures are to be implemented and maintained to:<br>• Prevent sediment moving off-site and sediment laden water entering any water course, drainage lines, or drain inlets<br>• Reduce water velocity and capture sediment on site<br>• Minimise the amount of material transported from site to surrounding pavement surfaces.<br>Divert clean water around the site (in accordance with the Blue Book) | Contractor | Pre-construction |
| 28 | Traffic and transport | Traffic Management Plans (TMPs) would be prepared by the project team and approved by Transport road operations team prior to implementation. This will include review and update of TMPs between stages if necessary or when modifications to management measures are proposed. The TMPs will take into consideration the management measures identified in Table 6-9 of Section 6.4.3 of this REF for implementation. | Contractor | Construction |
| 29 | Traffic and transport | Work planning is to limit the complete closure of the bridge to out of hours periods to the extend practical. | Contractor | Construction |
| 30 | Traffic and transport | Advanced warning of bridge closures are to be provided to Council, emergency services, transport and freight operators and the public. Road users notices are to include detour information. | Contractor | Construction |
| 31 | Noise and vibration | All sensitive receivers (e.g., schools and local residents) likely to be affected will be notified at least 7days prior to commencement of any works associated with the activity that may have an adverse noise or vibration impact. The notification will provide details of:<br>• The project<br>• The construction period and construction hours<br>• Contact information for project management staff<br>• Complaint and incident reporting<br>• How to obtain further information. | Contractor | Prio to and during construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|---|---|---|---|---|
| 32 | Noise and vibration | Where practical in-principial noise controls, as listed in section 8.1 of the NVIA (GHD, 2024) ae to be employed, including:<br>• Substitution of noise equipment with less noisy alternatives<br>• Modification of existing equipment e.g. use of attenuation<br>• Use and site equipment in a manner which reduces the potential noise impacts at sensitive receivers e.g. use buildings, structures or topography to avoid line of site from noise source to receiver<br>• Undertake regular maintenance to ensure equipment is running at optimal conditions and not producing excessive noise. | Contractor | Construction |
| 33 | Noise and vibration | Where impacts are unavoidable particularly during out of hours works apply the additional mitigation measures listed in Sections 8.3 and 8.4 of the NVIA (GHD, 2024). | Contractor | Construction |
| 34 | Unexpected finds | The Standard Management Procedure - Unexpected Heritage Items (Transport, 2015) will be followed in the event that an unknown or potential Aboriginal object/s, including skeletal remains, is found during construction. This applies where Transport does not have approval to disturb the object/s or where a specific safeguard for managing the disturbance (apart from the Procedure) is not in place.<br>Work will only re-commence once the requirements of that Procedure have been satisfied. | Contractor | During construction |
| 35 | Aboriginal cultural heritage | All personnel working on the site are to be advised of their responsibilities regarding Aboriginal cultural heritage under the NP&W Act. | Contractor | Pre-construction, construction |
| 36 | Heritage fabric | The number of additional penetrations to original metal and cement fabric are to be minimised where possible. If attachments are required, penetrations into existing joins or at the location of current holes is preferrable. | Contractor | Construction |
| 37 | Heritage fabric | Preference for replacements components should be with similar materials to the extent possible. | Contractor | Construction |
| 38 | Unexpected finds | If at any time during the proposal construction, historical heritage materials, features and/or deposits are found, the Unexpected Heritage Finds Guideline (Transport 2022) would be followed. Specifically, the following actions would be undertaken:<br>• All construction that could potentially harm the historical heritage materials, features or deposits would cease. Construction that does not have the potential to harm the historical heritage would continue only if it is outside the minimum 10 m buffer.<br>• The on-site supervisor would inform Transport environment staff of the discovery.<br>• A suitably qualified and experienced archaeologist (the archaeologist) would be contacted as soon as practicable in relation to the unexpected discovery of any historical heritage and would be responsible for recording, in detail, the location and context of any historical heritage.<br>• It is preferable to avoid impacts on historical heritage where possible. If avoidance is not possible, the archaeologist would conduct a salvage excavation. The aims of the salvage excavation would be to obtain as much information as possible from the historical heritage materials, features and/or deposits. | Contractor | Construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|---|---|---|---|---|
| | | • The archaeologist would provide a report detailing the excavation, salvage and analysis results to Heritage NSW at the completion of the salvage. | | |
| 39 | Visual impact | Bridge works are to be planned in accordance with Transport's Bridge Aesthetic Guidelines 2012. | Contractor | Pre-construction |
| 40 | Visual impact | All working areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day. | Contractor | During construction |
| 41 | Visual impact | Temporary site lighting is to be installed and operated in accordance with AS4282:1997 *Control of the Obtrusive Effect of Outdoor Lighting*. | Contractor | During construction |
| 42 | Visual impact | Project work sites, including construction areas and supporting facilities (such as storage compounds and offices) are to be managed to minimize visual impacts, including appropriate storage of equipment, parking, stockpile screening and arrangements for the storage and removal of rubbish and waste materials. | Contractor | During construction |
| 43 | Lighting | Transport will install a replacement LED lighting system onto the bridge as soon as practical following the completion of the works. The system will be designed in consultation with Council and will maintain or improve the lighting functionality on the bridge present on the bridge prior to the works. | Contractor | Operation |
| 44 | Property and Land use | The community is to be notified of works and in particular closures to roads, pathways and waterways prior to works commencing. | Contractor | During construction |
| 45 | Socio-economic | The Communication Plan (CP) will be revised as necessary and implemented as part of the Construction Environmental Management Plan to ensure provision of timely and accurate information to the community and stakeholders during construction.<br>The CP will include, as a minimum:<br>• Mechanisms to provide details and timing of proposed activities to affected stakeholders (residents, local businesses, organisations, emergency services and river users etc.) and distribution of information about the proposal.<br>• Toll free number and email address for enquiries and complaints<br>• How the project webpage will be maintained for the duration of the proposal<br>• A complaints handling procedure<br>• Consultation activities to be carried out. | Transport | Pre-construction/ construction |
| 46 | Socio-economic | Temporary construction traffic staging to consider impacts to local residents during construction, particularly in North Macksville, during periods of full bridge closure as well as maintaining safe access during single lane operation. | Contractor | Construction |
| 47 | Socio-economic | The proposal is to prioritise opportunities for Indigenous workers and procurement in line with the NSW's Governments Aboriginal Procurement Policy and Transport's Aboriginal Participation Strategy. | Contractor | Construction |
| 48 | Socio-economic | Where feasible, the proposal is to prioritise opportunities for Indigenous workers and procurement in line with the NSW's Governments Aboriginal Procurement Policy (NSW Government, 2021) and Transport's Aboriginal Participation Strategy (Transport, 2021b). | Contractor | Construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|---|---|---|---|---|
| 49 | Waste | Suspected chromium containing paint materials are to be managed in accordance with the Australian Standard AS/NZS 4361.1:2017 Guide to hazardous paint management Lead and other hazardous metallic pigments in industrial applications. | Contractor | During construction |
| 50 | Waste | Resource management hierarchy principles are to be followed:<br>• Avoid unnecessary resource consumption as a priority.<br>• Avoidance is followed by resource recovery (including reuse of materials, reprocessing, recycling and energy recovery).<br>Disposal is undertaken as a last resort. (in accordance with the Waste Avoidance & Resource Recovery Act 2001). | Contractor | During construction |
| 51 | Waste | A Waste Management Plan must be prepared that follows the Roads and Maritime Services Technical Guide: Management of road construction and maintenance waste and the requirements of the AS/NZS 4361.1:2017 Guide to hazardous paint management Lead and other hazardous metallic pigments in industrial applications. | Contractor | During construction |
| 52 | Waste | All wastewater from vessels is to be discharged at an approved vessel wastewater disposal facility. No vessel wastewater is to be discharged (ie pumped out) directly into the water or onto any land adjacent. | Contractor | During construction |
| 53 | Waste | Hazardous waste:<br>• Must be temporary stored in the secured site compound in sealed and labelled containers<br>• Containers must be located in a self-safe storage container and double bunded and sign posted as contaminated waste.<br>• Treatment of hazardous waste is to be off site at a licenced facility. | Contractor | During construction |
| 54 | Waste | A waste transport licence and waste tracking is required for hazardous waste. | Contractor | During construction |
| 55 | Air quality | The CEMP is to include the following measures to manage air quality impacts:<br>• Mitigation and suppression measures to be implemented including the management of stockpiles or areas that may generate dust<br>• Work is to cease during strong winds or other adverse weather conditions<br>• Vegetation or other materials are not to be burnt on site<br>• Vehicles transporting waste or other materials that may produce odours or dust are to be covered during transportation<br>• Management and monitoring of emissions resulting from dry abrasive blasting, including the containment system, would meet the requirements of AS/NZS 4361.1:2017 Guide to hazardous paint management Lead and other hazardous metallic pigments in industrial applications<br>• Containment system to be checked regularly and any breaches promptly repaired. | Contractor | Detailed design / Pre-construction |
| 56 | Utilities | Prior to the commencement of works:<br>• If utilities are to be impacted by the proposal this would be undertaken in accordance with design and construction methods approved by the relevant utility stakeholder. | Contractor | Detailed design / Pre-construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|---|---|---|---|---|
| 57 | Hazards and risks | The CEMP would include the following measures:<br>• Details of hazards and risks associated with all construction activities<br>• Measures to be implemented during construction to minimise these risks<br>• Details of record keeping for materials present on the site, material safety data sheets, and personnel training<br>• A program of monitoring to assess performance in managing identified risks<br>• Contingency measures to be implemented in the event of unexpected hazards, risks arising and emergency situations.<br>Measure will be prepared in accordance with relevant guidelines and standards, including relevant Safe Work Australia Codes of Practice, and EPA publications. | Contractor | Detailed design / Pre-construction |

## 7.3 Licensing and approvals

The licenses and approvals required for the proposal are summarised in Table 7-2.

Table 7-2: Summary of licensing and approvals required

| Instrument | Requirement | Timing |
|---|---|---|
| *Fisheries Management Act 1994* (s199) | Notification to the Minister for Lands and Water prior to any dredging or reclamation works.<br>[Note exemption under s227 of the Fisheries Management (General) Regulation 2010] | A minimum of 28 days prior to the start of work. |

# 8. Conclusion

This chapter provides the justification for the proposal taking into account its biophysical, social and economic impacts, the suitability of the site and whether or not the proposal is in the public interest. The proposal is also considered in the context of the objectives of the EP&A Act, including the principles of ecologically sustainable development as defined under Section 193 of the EP&A Regulation.

## 8.1 Justification

Macksville Bridge (B1873) was built in 1931 and is located on Giinagay Way over the Nambucca River. It is the key link between North Macksville and the town centre of Macksville.

Prior to 2017 Macksville Bridge was located on the Pacific Highway. The bridge was a crucial link between Sydney and Brisbane carrying very high traffic volumes with a large percentage of heavy vehicles. Routine maintenance on the bridge was often difficult due to the challenges involved with closing or load limiting the bridge to enable works to take place. During this time, routine monitoring noted the deterioration of some of the bridge's structural elements, including deterioration of the painting system, corrosion of many of the steel elements and chloride ingress to the concrete piers.

A routine inspection in July 2021 resulted in immediate repairs being required. These were undertaken at night under a full bridge closure over a period of two weeks. The bridge was load limited during the day. Further work is now required to maintain the structural integrity of the bridge and ensure safety for road users.

While there would be some short term environmental and socio-economic impacts during construction of the proposal, including potential impacts to water quality, increased traffic, noise and vibration, lane closures, loss of access to public areas and visual changes, these have been avoided or minimized wherever possible through standard and site-specific mitigation measures and safeguards. During operation there would be minimal to no impacts associated with the ongoing usage of the bridge.

Overall it is considered that the adverse short term impacts of the proposal are outweighed by the long-term benefits of ensuring the structural integrity of the bridge, improving safety for road users and pedestrians, and increasing the longevity of the locally significant heritage item. Therefore the proposal is considered justified.

The public interest is best served through equitable distribution of resources, and investment in public infrastructure that fulfils the needs of the majority. The proposal represents a cost-efficient investment in public infrastructure that would maximise the long-term social and economic benefits, while minimising the long-term negative impacts on communities and the environment.

## 8.2 Objects of the EP&A Act

The objects of the EP&A Act and their relevance to the proposal is summarised in Table 8-1.

Table 8-1: Objects of the EP&A Act

| Instrument | Requirement |
|---|---|
| 1.3(a) To promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources. | The proposal would improve the social and economic welfare of the community by improving the safety and longevity of the Macksville Bridge.<br>The safeguards and management measures detailed in this REF allow for the proper management, development and conservation of natural and artificial resources. |
| 1.3(b) To facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment. | The proposal is considered consistent with the principals of ecologically sustainable development as outlined in Section 8.2.1. |

| Instrument | Requirement |
|---|---|
| 1.3(c) To promote the orderly and economic use and development of land. | Not relevant to the proposal. |
| 1.3(d) To promote the delivery and maintenance of affordable housing. | Not relevant to the proposal. |
| 1.3(e) To protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats. | Impacts to native animals and plants, including threatened species, populations and ecological communities and their habitats were considered in Section 6.1. |
| 1.3(f) To promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage). | The proposal would not result in potential impacts to Aboriginal heritage. No impacts to non-Aboriginal heritage are expected. The management of Aboriginal heritage and non-Aboriginal heritage is considered in Section 6.6 and Appendix F. |
| 1.3(g) To promote good design and amenity of the built environment. | Not relevant to the proposal. |
| 1.3(h) To promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants. | Not relevant to the proposal. |
| 1.3(i) To promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State. | Not relevant to the proposal. |
| 1.3(j) To provide increased opportunity for community participation in environmental planning and assessment. | The proposal development process has involved the consultation with relevant stakeholders. Consultation carried out and proposed is outlined in Section 5. |

### 8.2.1 Ecologically sustainable development

Ecologically sustainable development (ESD) is development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends. The principles of ESD have been an integral consideration throughout the development of the project.

ESD requires the effective integration of economic and environmental considerations in decision-making processes. The four main principles supporting the achievement of ESD are discussed below.

**The precautionary principle**

The precautionary principle deals with reconciling scientific uncertainty about environmental impacts with certainty in decision-making. It provides that where there is a threat of serious or irreversible environmental damage, the absence of full scientific certainty should not be used as a reason to postpone measures to prevent environmental degradation.

This principle was considered during options assessment (refer to Chapter 2). The precautionary principle has guided the assessment of environmental impacts for this REF and the development of mitigation measures as follows:

- The best-available technical information, environmental standards and measures have been used to minimise environmental risks
- Conservative ‘worst case’ scenarios were considered while assessing environmental impact
- Specialist studies were incorporated to gain a detailed understanding of the existing environment.

**Intergenerational equity**

Social equity is concerned with the distribution of economic, social and environmental costs and benefits. Inter-generational equity introduces a temporal element with a focus on minimising the distribution of costs to future generations.

Intergenerational equity was applied to the proposal in the following ways:

- Issues that have potential long-term implications were minimised or avoided, for example consumption of non-renewable resources, waste disposal, greenhouse emissions, removal of vegetation and impacts on water quality, through design selection and application of management measures.
- Benefits that the proposal provides to current and future generations of local communities and the surrounding region, that would maintain or enhance the health, diversity and productivity of the environment, were identified.

**Conservation of biological diversity and ecological integrity**

This principle reinforces the previous principles by requiring the diversity of genes, species and communities, as well as the ecosystem and habitats to which they belong, be maintained and improved to ensure their survival.

The proposal would not significantly impact on biological diversity or ecological integrity. Site selection criteria were used for construction-phase facilities to avoid native vegetation removal and measures will be implemented to ensure the integrity of aquatic ecosystems is preserved.

**Improved valuation, pricing and incentive mechanisms**

The principle of internalising environmental costs into decision making requires consideration of all environmental resources that may be affected by the carrying out of a project, including air, water, land and living things.

Improved valuation, pricing and incentive mechanisms were applied to the proposal in the following ways:

- The value of the project to the community in terms of improved safety was recognised.
- Mitigation measures for the avoidance, reuse, recycling and management of waste during construction and operation are to be implemented.

## 8.3 Conclusion

The proposed rehabilitation of the Macksville Bridge is subject to assessment under Division 5.1 of the EP&A Act. This REF has examined and taken into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the proposed activity.

This has included consideration (where relevant) of conservation agreements and plans of management under the NPW Act, biodiversity stewardship sites under the BC Act, wilderness areas, areas of outstanding value, impacts on threatened species and ecological communities and their habitats, and other protected fauna and native plants. It has also considered potential impacts to matters of national environmental significance listed under the EPBC Act.

A number of potential environmental impacts from the proposal have been avoided or reduced during the design development and options assessment. The proposal, as described in the REF, best meets the project objectives but would still result in some impacts on traffic, noise and vibration and community amenity. Safeguards and management measures as detailed in this REF would ameliorate or minimise these expected impacts. The proposal would also improve safety, and increase longevity of the bridge. On balance, the proposal is considered justified and the following conclusions are made.

**Significance of impact under NSW legislation**

The proposal would be unlikely to cause a significant impact on the environment. Therefore, it is not necessary for an EIS to be prepared or approval to be sought from the Minister for Planning under Division 5.2 of the EP&A Act. A BDAR or SIS is not required. The proposal is subject to assessment under Division 5.1 of the EP&A Act. Consent from council is not required.

**Significance of impact under Australian legislation**

The proposal is not likely to have a significant impact on matters of national environmental significance or the environment of Commonwealth land within the meaning of the EPBC Act. A referral to the DCCEEW is not required.

# 9. Certification

This REF 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.

| | |
|---|---|
| Name: | Simon Murphy |
| Position: | Technical Director - Environment |
| Company name: | GHD Pty Ltd |
| Date: | 14 May 2024 |

I certify that I have reviewed and endorsed the contents of this REF and, to the best of my knowledge, it is in accordance with the EP&A Act, the EP&A Regulation and the Guidelines approved under Section 170 of the EP&A Regulation, and the information is neither false nor misleading. I accept it on behalf of Transport for NSW.

| | |
|---|---|
| Name: | William Mahar |
| Position: | Project/ Contract Manager |
| Transport region/program: | Project Services, North |
| Date: | 14 May 2024 |

| | |
|---|---|
| Name: | Tammie Tribe |
| Position: | Senior Environment and Sustainability Officer |
| Transport region/program: | Safety, Environment & Regulation |
| Date: | 14 May 2024 |

# 10. EP&A Regulation publication requirement

Table 10-1: EP&A Regulation publication requirement

| Requirement | Yes/No |
|---|---|
| Does this REF need to be published under section 171(4) of the EP&A Regulation? | Yes |

# 11. References

Department of Planning and Environment (DPEa) 2022, North Coast Regional Plan 2041.

Department of Planning and Environment (DPEb) 2022, Consolidated State Environmental Planning Policies.

Eddie, M.W 2000, Soil Landscapes of the Macksville and Nambucca 1:100 000 Sheets – Department of Land and Water Conservation, Sydney.

Infrastructure NSW 2022, Staying Ahead: State Infrastructure Strategy 2022-2042.

Transport for NSW 2018, NSW Future Transport Strategy 2056.

Transport for NSW 2021, Walking and Cycling Program.

Nambucca Valley Council 2010, Development Control Plan.

North Coast Local Land Services (North Coast LLS) 2017, North Coast Regional Strategic Weed Management Plan 2017-2022.

Office of Environment and Heritage 2017, Nambucca Shire Floodplain Risk Management Plan.

# Terms and acronyms used in this REF

Table 11-1: Terms and acronyms used in this REF

| Term / Acronym | Description |
|---|---|
| AusLink | Mechanism to facilitate cooperative transport planning and funding by Commonwealth and state and territory jurisdictions |
| BC Act | *Biodiversity Conservation Act 2016 (NSW)* |
| CEMP | Construction environmental management plan |
| EIA | Environmental impact assessment |
| EP&A Act | *Environmental Planning and Assessment Act 1979 (NSW).* Provides the legislative framework for land use planning and development assessment in NSW |
| EPBC Act | *Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth).* Provides for the protection of the environment, especially matters of national environmental significance, and provides a national assessment and approvals process |
| ESD | Ecologically sustainable development. Development which uses, conserves and enhances the resources of the community so that ecological processes on which life depends, are maintained and the total quality of life, now and in the future, can be increased |
| FM Act | *Fisheries Management Act 1994 (NSW)* |
| Heritage Act | *Heritage Act 1977 (NSW)* |
| LALC | Local Aboriginal Land Council |
| LEP | Local Environmental Plan. A type of planning instrument made under Part 3 of the EP&A Act. |
| LoS | Level of Service. A qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers |
| MNES | Matters of national environmental significance under the *Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)* |
| NPW Act | *National Parks and Wildlife Act 1974 (NSW)* |
| OEH | Office of Environment and Heritage within the Department of Planning and Environment. |
| PEA Act | *Protection of the Environment Administration Act 1991.* |
| QA Specifications | Specifications developed by Transport for use with road work and bridge work contracts let by Transport. |
| RMS | NSW Roads and Maritime Services, now Transport for NSW |
| SEPP | State Environmental Planning Policy. A type of planning instrument made under Part 3 of the EP&A Act. |
| SEPP (Biodiversity and Conservation) | State Environmental Planning Policy (Biodiversity and Conservation) 2021 |
| SEPP (Planning Systems) | State Environmental Planning Policy (Planning Systems) 2021 |
| SEPP (Precincts – Central River City) | State Environmental Planning Policy (Precincts – Central River City) 2021 |
| SEPP (Precincts – Eastern Harbour City) | State Environmental Planning Policy (Precincts – Eastern Harbour City) 2021 |
| SEPP (Precincts – Regional) | State Environmental Planning Policy (Precincts – Regional) 2021 |
| SEPP (Resilience and Hazards) | State Environmental Planning Policy (Resilience and Hazards) 2021 |

| | |
|---|---|
| SEPP (Transport and Infrastructure) | State Environmental Planning Policy (Transport and Infrastructure) 2021 |
| Transport | Transport for NSW |

# Appendix A - Consideration of section 171 factors and matters of national environmental significance and Commonwealth land

## Section 171 Factors

In addition to the requirements of the Guideline for Division 5.1 assessments (DPE 2022) and the Roads and Related Facilities EIS Guideline (DUAP 1996) as detailed in the REF, 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 |
|---|---|
| • Any environmental impact on a community?<br>Reduced landscape and visual amenity, impacts on land use, noise and vibration and traffic during construction of the proposal. These will only occur during construction with an overall improvement to local amenity to be realised during operation. | Short-term minor negative impacts<br>Long-term major positive impacts |
| • Any transformation of a locality?<br>There will be some temporary disruption to the appearance of the bridge and immediate areas during the work which will be improved following the works due to a newly painted bridge and imp[roved lighting installation. | Short-term minor negative impacts<br>Long-term major positive impacts |
| • Any environmental impact on the ecosystems of the locality? | Short-term minor negative impacts<br>Long-term major positive impacts |
| • Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality? | Short-term minor negative impacts<br>Long-term major positive impacts |
| • 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?<br>The bridge is a listed heritage item and a significant part of the Macksville towns history. Whilst the works will impact on the fabric on the bridge they will help lengthen the life of the bridge into the future thereby preserving this as a piece of living history and resulting in improve historical outcomes. | Short-term minor negative impacts<br>Long-term major positive impacts |
| • Any impact on the habitat of protected fauna (within the meaning of the *National Parks and Wildlife Act 1974*)? | Negligible |
| • Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air? | Negligible |
| • Any long-term effects on the environment? | Negligible |
| • Any degradation of the quality of the environment? | Negligible |
| • Any risk to the safety of the environment?<br>There is potential for risk to the safety of the environment during construction works but these would be minor with the proposed management measures in place. During operational there would be no ongoing sources of risk, rather the project would improve the state of the bridge and reduce it becoming a structural safety issue in the future. | Short-term minor negative impacts<br>Long-term major positive impacts |
| • Any reduction in the range of beneficial uses of the environment? | Negligible |
| • Any pollution of the environment?<br>There is potential for some population escape to the environment during construction works but these would be minor with the proposed management measures in place. During operational there would be no ongoing sources of pollution. | Short-term minor negative impacts<br>Long-term negligible. |

| Factor | Impact |
|---|---|
| • Any environmental problems associated with the disposal of waste?<br>All wastes will be recovered for reuse or recycling otherwise disposed of to a licensed land fill. . | Negligible |
| • Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply?<br>As the works are related to the refurbishment of an existing structure rather than building a new structure only a relatively small amount of materials are required to achieve the proposal objectives. | Negligible |
| • Any cumulative environmental effect with other existing or likely future activities? | Negligible |
| • Any impact on coastal processes and coastal hazards, including those under projected climate change conditions? | Negligible |
| • Applicable local strategic planning statements, regional strategic plans or district strategic plans made under the Act, Division 3.1,<br>Section 2.1 of the REF found that the project would be consistency with all applicable strategic plans a t a local regional and NSW level. | Long-term positive impacts |
| • Other relevant environmental factors. | None |

## Matters of National Environmental Significance and Commonwealth land

Under the environmental assessment provisions of the EPBC Act, the following matters of national environmental significance and impacts on Commonwealth land are required to be considered to assist in determining whether the proposal should be referred to the Australian Department of Climate Change, Energy, the Environment and Water.

A referral is not required for proposed actions that may affect nationally-listed threatened species, endangered ecological communities and migratory species. Impacts on these matters are still assessed as part of the REF in accordance with Australian Government significant impact criteria and taking into account relevant guidelines and policies.

| Factor | Impact |
|---|---|
| • Any impact on a World Heritage property? | Nil |
| • Any impact on a National Heritage place? | Nil |
| • Any impact on a wetland of international importance? | Nil |
| • Any impact on a listed threatened species or communities? | Nil |
| • Any impacts on listed migratory species? | Nil |
| • Any impact on a Commonwealth marine area? | Nil |
| • Does the proposal involve a nuclear action (including uranium mining)? | Nil |
| • Additionally, any impact (direct or indirect) on the environment of Commonwealth land? | Nil |

# Appendix B - Statutory consultation checklists

## Transport and Infrastructure SEPP

**Certain development types**

| Development type | Description | Yes / No | If 'yes' consult with | SEPP (Transport and Infrastructure) Section |
|---|---|---|---|---|
| Car Park | Does the project include a car park intended for the use by commuters using regular bus services? | No | NA | Section 2.110 |
| Bus Depots | Does the project propose a bus depot? | No | NA | Section 2.110 |
| Permanent road maintenance depot and associated infrastructure | Does the project propose a permanent road maintenance depot or associated infrastructure such as garages, sheds, tool houses, storage yards, training facilities and workers' amenities? | No | NA | Section 2.110 |

**Development within the Coastal Zone**

| Development type | Description | Yes / No | If 'yes' consult with | SEPP (Transport and Infrastructure) Section |
|---|---|---|---|---|
| Development with impacts on certain land within the coastal zone | Is the proposal within a coastal vulnerability area and is inconsistent with a certified coastal management program applying to that land? | No | NA | Section 2.14 |

Note: See interactive map at *Planning Portal NSW spatial viewer -find a property*. Note the coastal vulnerability area has not yet been mapped.

Note: a certified coastal zone management plan is taken to be a certified coastal management program.

**Council related infrastructure or services**

| Development type | Potential impact | Yes / No | If 'yes' consult with | SEPP (Transport and Infrastructure) Section |
|---|---|---|---|---|
| Stormwater | Are the works likely to have a *substantial* impact on the stormwater management services which are provided by council? | No | NA | Section 2.10 |
| Traffic | Are the works likely to generate traffic to an extent that will *strain* | Yes | NA. Consultation undertaken with Nambucca Shire | Section 2.10 |

| Development type | Potential impact | Yes / No | If 'yes' consult with | SEPP (Transport and Infrastructure) Section |
|---|---|---|---|---|
| | the capacity of the existing road system in a local government area? | | Council regardless due to the nature of the works. | |
| Sewerage system | Will the works involve connection to a council owned sewerage system? If so, will this connection have a *substantial* impact on the capacity of any part of the system? | No | NA | Section 2.10 |
| Water usage | Will the works involve connection to a council owned water supply system? If so, will this require the use of a *substantial* volume of water? | No | NA | Section 2.10 |
| Temporary structures | Will the works involve the installation of a temporary structure on, or the enclosing of, a public place which is under local council management or control? If so, will this cause more than a *minor* or *inconsequential* disruption to pedestrian or vehicular flow? | No | NA | Section 2.10 |
| Road & footpath excavation | Will the works involve more than *minor* or inconsequential excavation of a road or adjacent footpath for which council is the roads authority and responsible for maintenance? | Yes | Nambucca Shire Council has been consulted with regarding shared path impact along the river foreshore and across the bridge. | Section 2.10 |

**Local heritage items**

| Development type | Potential impact | Yes / No | If 'yes' consult with | SEPP (Transport and Infrastructure) Section |
|---|---|---|---|---|
| Local heritage | Is there is a local heritage item (that is not also a State heritage item) or a heritage conservation area in the study area for the works? If yes, does a heritage assessment indicate that the potential impacts to the heritage significance of the item/area are more than minor or inconsequential? | Yes | Nambucca Shire Council | Section 2.11 |

**Flood liable land**

| Development type | Potential impact | Yes / No | If 'yes' consult with | SEPP (Transport and Infrastructure) Section |
|---|---|---|---|---|
| Flood liable land | Are the works located on flood liable land? If so, will the works change flood patterns to more than a *minor* extent? | No | NA | Section 2.12 |
| Flood liable land | Are the works located on flood liable land? (to any extent). If so, do the works comprise more than minor alterations or additions to, or the demolition of, a building, emergency works or routine maintenance? | No | NA | Section 2.13 |

Note: Flood liable land means land that is susceptible to flooding by the probable maximum flood event, identified in accordance with the principles set out in the manual entitled Floodplain Development Manual: the management of flood liable land published by the New South Wales Government.

**Public authorities other than councils**

| Development type | Potential impact | Yes / No | If 'yes' consult with | SEPP (Transport and Infrastructure) Section |
|---|---|---|---|---|
| National parks and reserves | Are the works adjacent to a national park or nature reserve, or other area reserved under the *National Parks and Wildlife Act 1974*, or on land acquired under that Act? | No | Environment and Heritage Group, DPE | Section2.15 |
| National parks and reserves | Are the works on land in Zone E1 National Parks and Nature Reserves or in a land use zone equivalent to that zone? | No | Environment and Heritage Group, DPE | Section 2.15 |
| Navigable waters | Do the works include a fixed or floating structure in or over navigable waters? | Yes | Transport for NSW - Maritime | Section 2.15 |
| Bush fire prone land | Are the works for the purpose of residential development, an educational establishment, a health services facility, a correctional centre or group home in bush fire prone land? | No | Rural Fire Service (RFS)<br>[Refer to the NSW RFS publication: *Planning for Bush Fire Protection (2006)*] | Section 2.15 |
| Artificial light | Would the works 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? (Note: the dark sky region is within 200 kilometres of the Siding Spring Observatory) | No | Director of the Siding Spring Observatory | Section 2.15 |

| Development type | Potential impact | Yes / No | If 'yes' consult with | SEPP (Transport and Infrastructure) Section |
|---|---|---|---|---|
| Defence communications buffer land | Are the works on buffer land around the defence communications facility near Morundah? (Note: refer to Defence Communications Facility Buffer Map referred to in section 5.15 of Lockhart LEP 2012, Narrandera LEP 2013 and Urana LEP 2011. | No | Secretary of the Commonwealth Department of Defence | Section 2.15 |
| Mine subsidence land | Are the works on land in a mine subsidence district within the meaning of the *Mine Subsidence Compensation Act 1961*? | No | Mine Subsidence Board | Section 2.15 |

# Appendix C – Biodiversity searches and microbat inspection report

13 July 2023
Ref No.: 4625-1001

Transport for NSW
34 Heber Street
SOUTH GRAFTON NSW 2460
*Via email:* nerissa.wilcock@transport.nsw.gov.au

**Attention: Ms Nerissa Wilcock**

Dear Nerissa

## Microbat Survey and Habitat Assessment Report –Macksville Bridge (B1873)

# 1. Introduction

This report provides the results of a microbat survey and habitat assessment undertaken at Macksville Bridge (B1873) on Cooper Street/ Giinagay Way at Macksville, NSW. The bridge spans 218.3 m over Nambucca River and is an overhead braced truss bridge with steel beams and trusses, and concrete piers and decking. Macksville Bridge requires extensive rehabilitation works including repainting and abutment repairs to be undertaken, commencing late 2023.

The assessment was undertaken in accordance with the Transport for NSW *Microbat Management Guidelines* (2023; hereafter referred to as 'the guidelines') with the objectives of:

- Determining whether or not Macksville Bridge represents potential roosting, foraging or breeding habitat for a number of species of threatened insectivorous microbats known to occur within Northern NSW.
- If present, identifying species, the number of individuals and breeding status.
- Assessing the likely significance of potential impacts on threatened microbats (if found) in accordance with Section 7.3 of the *Biodiversity Conservation Act 2016* (BC Act).
- Determining whether a Microbat Management Plan is required, in accordance with the guidelines.

# 2. Methodology

A site visit was undertaken on 28 June 2023 by GeoLINK Ecologists Veronica Silver and Gemma Quick. The microbat survey and habitat assessment were conducted as follows:

- Pre-survey review of BioNet microbat records at or proximate to the bridge.
- Diurnal inspection of the entire underside of the bridge from a canoe and exposed creek banks with the aid of spotlights, binoculars and a digital camera with zoom lens.
- Fly-out survey at dusk with one thermal imagery camera (HIKMICRO G40) from the northern bank from 4:50 pm to 5:50 pm. The main focus of the fly-out survey was a drainage scupper in the third span from the north, which during the diurnal inspection was identified as either being blocked or possibly containing a roosting microbat.


PO Box 119
Lennox Head
NSW 2478
Bundjalung Nation
02 6687 7666

PO Box 1446
Coffs Harbour
NSW 2450
Gumbaynggir Country
02 6651 7666

PO Box 1267
Armidale
NSW 2350
Nganyaywana Country
02 6772 0454

PO Box 229
Lismore
NSW 2480
Bundjalung Nation
02 6621 6677

- Passive ultrasonic recorder (Titley Chorus) survey during fly-out, with one device located on the northern bank and one device located on the southern bank (refer to **Plate 2.1** and **Plate 2.2**).
- Post-survey review of photographs taken during diurnal inspections and video footage recorded from the thermal imagery camera.
- Post-survey analysis of microbat call recordings using Anabat Insight software.

**Plate 2.1 Ultrasonic detector deployed at southern bank of Nambucca River**

**Plate 2.2 Ultrasonic detector deployed at northern bank of Nambucca River**

# 3. Results

**Desktop Assessment**

Several microbat species have been recorded within the Macksville locality, however there are no BioNet records associated with Macksville Bridge.

**Diurnal Inspection**

The underside of the bridge was able to be fully inspected from canoe during the diurnal survey. Key results of survey are as follows:

- No microbats or evidence of microbats were observed.
- The majority of the bridge comprises unsuitable roosting habitat due to:
  - Metal components (e.g. expansion joints and beams) that are smooth, cold and prevent microbat roosting.
  - A lack of suitable cracks and cavities (e.g. > 20 mm wide and >100 mm deep) within concrete components of the bridge.
  - There being no decking gaps or other gaps between bridge components that provide suitable roosting habitat.
- A small number of roughened surfaces and mud swallow nests provide roosting opportunities; however, these are at exposed locations and provide opportunistic habitat for a small number of bats only (refer to **Plate 3.1**).
- Some drainage scuppers in the bridge provide potential moderate-quality roosting habitat, especially those that are blocked and do not allow light or water to infiltrate from above. An

estimated ten scuppers in the bridge are considered to provide suitable habitat (refer to **Plate 3.2**), however none contained microbats or obvious evidence of use (no staining, guano or bat bugs).

**Plate 3.1 Roughened surfaces provide low-quality opportunistic roosting habitat**

**Fly-out Survey**

No microbats were observed flying out of the bridge during the fly-out survey or post-survey review of recorded footage.

**Passive Ultrasonic Recorder Surveys**

Results of microbat call analysis are summarised in **Table 3.1** and sample calls are shown in **Figure 3.3**. A total of 22 sequences containing microbat calls were isolated from the recordings.

Sixteen calls were probably from Southern Myotis (*Myotis macropus*) based on the aquatic habitat at the site, however the calls did not have enough features to be separated from *Nyctophilus* spp, which have a similar call signature (Pennay *et al*. 2004). Macksville falls within the distribution of two *Nyctophilus* spp.; Lesser Long-eared Bat (*Nyctophilus geoffroyi*) and Gould's Long-eared Bat (*Nyctophilus gouldi*) (Australian Bat Society 2023). Six calls were not of high enough quality to be positively identified. One of the unidentified bat calls at the southern site is possibly a *Scotorepens* sp. Parnaby, the other is possibly a Eastern broad-nosed Bat (*Scotorepens orion*) or Greater Broad-nosed Bat (*Scoteanax rueppellii*) however the calls are not of suitable quality or duration to be confirmed.

Southern Myotis and Greater Broad-nosed Bat are both listed as vulnerable under the BC Act.

**Table 3.1 Number of microbat sequence files recorded during fly-out surveys**

| Site | Southern Myotis or *Nyctophillus spp.* | Unidentified Bat/s | Total Bat Sequences/ Site |
|---|---|---|---|
| Macksville North | 5 | 4 | **9** |
| Macksville South | 11 | 2 | **13** |
| **Total Bat Sequences/ Species** | **16** | **6** | **22** |

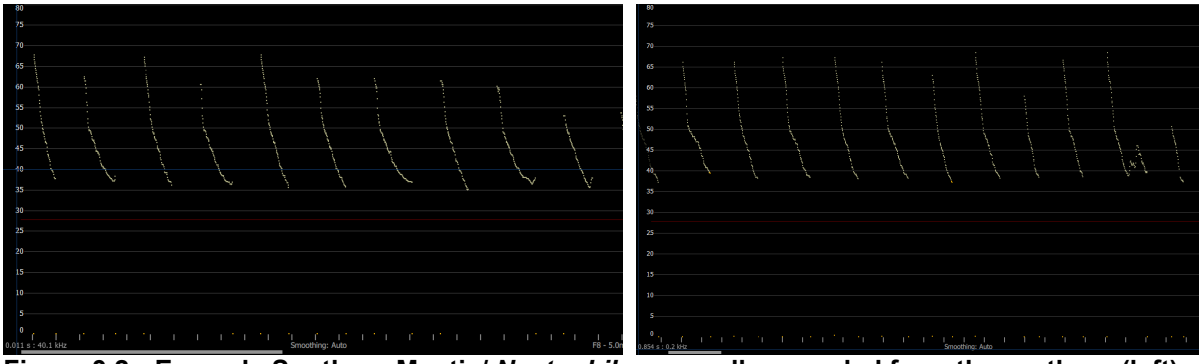


**Figure 3.2 Example Southern Myotis/ *Nyctophilus* sp. calls recorded from the northern (left) and southern (right) bankof Nambucca River**

# 4. Discussion and Recommendations

The results indicate that the majority of Macksville Bridge does not provide suitable roosting habitat for microbats. Approximately ten scuppers provide moderate-quality potential roosting habitat and roughened surfaces on the bridge provide low-quality, exposed opportunistic roosting habitat. No microbats or evidence of microbats were observed during a complete diurnal inspection of the bridge and no microbats were observed during the fly-out survey.

Microbat calls, most of which were likely Southern Myotis, were recorded from passive detectors set-up on the northern and southern banks during the fly-out survey. Based on the results of bridge inspection, these calls were likely to made by foraging microbats flying near the detectors and not from bats leaving a roost in the bridge. Nambucca River provides potential foraging habitat for Southern Myotis; however, bridge works are unlikely to directly or indirectly impact the foraging value of this habitat and therefore an assessment of significance under the BC Act for Southern Myotis and a Microbat Management Plan are not required.

The following mitigation measures are recommended to minimise potential adverse impacts on microbats that may opportunistically use Macksville Bridge or forage near the bridge:

- Check drainage scuppers from the road pavement before these are cleaned.
- Ensure that an unexpected finds procedure is in place for the project and communicated to all construction personnel.
- If microbats are present, TfNSW would contact the ecologist who would determine in consultation with TfNSW, the appropriate management pathway, undertake statutory assessments (if required) and determine whether a microbat management plan is required.

Yours sincerely
**GeoLINK**

V. Silver

**Veronica Silver**
Senior Ecologist

## References

Australian Bat Society (2023). BatMap, [Online]. Available: https://www.ausbats.org.au/batmap.html. [Accessed July 2023].

Pennay, M., Law, B. & Reinhold L. (2004). *Bat calls of New South Wales, Region based guide to the echolocation calls of microchiropteran bats.* NSW Department of Environment and Conservation.

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Australian Government
Bureau of Meteorology

# Groundwater Dependent Ecosystems Atlas

Macksville Bridge


Aquatic Inflow Dependent Ecosystem (IDE), reliant on water in addition to rainfall

Highly likely to be an ID

Likely to be an IDE

Terrestrial GDE (no data)

No ecosystems analyse

Terrestrial GDE

Known GDE (regional study)

High potential GDE (regional study)

Moderate potential GDE (regional study)

N

1:23,942

Kilometres 0.5 1.0

Data Source: Bureau of Meteorology, Geoscience Australia and State/Territory lead water agencies. Refer to metadata for further information: Click here

Australian Albers GDA94



Date: 12 May, 2023

Data from the BioNet Atlas website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1°C; ^^ rounded to 0.01°C. Copyright the State of NSW through the Department of Planning, Industry and Environment. Search criteria : Public Report of all Valid Records of Entities in selected area [North: -30.65 West: 152.88 East: 152.98 South: -30.75] returned a total of 7,468 records of 990 species.
Report generated on 15/05/2023 4:04 PM

| Kingdom | Class | Family | Species Code | Scientific Name | Exotic | Common Name | NSW status | Comm. status | Records | Info |
|---|---|---|---|---|---|---|---|---|---|---|
| Animalia | Actinopterygii | Poeciliidae | T013 | *Gambusia holbrooki* | * | Mosquito Fish | | | 6 | |
| Animalia | Amphibia | Myobatrachidae | 3131 | *Crinia parinsignifera* | | Eastern Sign-bearing Froglet | P | | 1 | |
| Animalia | Amphibia | Myobatrachidae | 3134 | *Crinia signifera* | | Common Eastern Froglet | P | | 29 | |
| Animalia | Amphibia | Myobatrachidae | 3074 | *Mixophyes fasciolatus* | | Great Barred Frog | P | | 2 | |
| Animalia | Amphibia | Myobatrachidae | 3118 | *Pseudophryne coriacea* | | Red-backed Toadlet | P | | 14 | |
| Animalia | Amphibia | Myobatrachidae | T119 | *Pseudophryne sp.* | | | P | | 1 | |
| Animalia | Amphibia | Myobatrachidae | 3035 | *Uperoleia fusca* | | Dusky Toadlet | P | | 3 | |
| Animalia | Amphibia | Myobatrachidae | 3158 | *Uperoleia laevigata* | | Smooth Toadlet | P | | 1 | |
| Animalia | Amphibia | Myobatrachidae | 3329 | *Uperoleia sp.* | | | P | | 1 | |
| Animalia | Amphibia | Limnodynastidae | 3001 | *Adelotus brevis* | | Tusked Frog | P | | 7 | |
| Animalia | Amphibia | Limnodynastidae | 3058 | *Limnodynastes dumerilii* | | Eastern Banjo Frog | P | | 2 | |
| Animalia | Amphibia | Limnodynastidae | 3061 | *Limnodynastes peronii* | | Brown-striped Frog | P | | 31 | |
| Animalia | Amphibia | Limnodynastidae | 3063 | *Limnodynastes tasmaniensis* | | Spotted Grass Frog | P | | 1 | |
| Animalia | Amphibia | Hylidae | 3166 | *Litoria aurea* | | Green and Golden Bell Frog | E1,P | V | 1 | |
| Animalia | Amphibia | Hylidae | 3169 | *Litoria brevipalmata* | | Green-thighed Frog | V,P | | 1 | |
| Animalia | Amphibia | Hylidae | 3171 | *Litoria caerulea* | | Green Tree Frog | P | | 14 | |
| Animalia | Amphibia | Hylidae | 3180 | *Litoria dentata* | | Bleating Tree Frog | P | | 21 | |
| Animalia | Amphibia | Hylidae | 3183 | *Litoria fallax* | | Eastern Dwarf Tree Frog | P | | 24 | |
| Animalia | Amphibia | Hylidae | 3187 | *Litoria gracilenta* | | Dainty Green Tree Frog | P | | 4 | |
| Animalia | Amphibia | Hylidae | 3191 | *Litoria latopalmata* | | Broad-palmed Frog | P | | 2 | |
| Animalia | Amphibia | Hylidae | 3199 | *Litoria nasuta* | | Rocket Frog | P | | 3 | |
| Animalia | Amphibia | Hylidae | 3204 | *Litoria peronii* | | Peron's Tree Frog | P | | 6 | |
| Animalia | Amphibia | Hylidae | 3214 | *Litoria tyleri* | | Tyler's Tree Frog | P | | 8 | |
| Animalia | Amphibia | Bufonidae | 3269 | *Rhinella marina* | * | Cane Toad | | | 1 | |
| Animalia | Reptilia | Chelidae | 2017 | *Chelodina longicollis* | | Eastern Snake-necked Turtle | P | | 12 | |
| Animalia | Reptilia | Pygopodidae | 2170 | *Lialis burtonis* | | Burton's Snake-lizard | P | | 1 | |
| Animalia | Reptilia | Pygopodidae | 2174 | *Pygopus lepidopodus* | | Common Scaly-foot | P | | 2 | |
| Animalia | Reptilia | Scincidae | 2417 | *Bellatorias major* | | Land Mullet | P | | 2 | |
| Animalia | Reptilia | Scincidae | 2031 | *Calyptotis ruficauda* | | Red-tailed Calyptotis | P | | 3 | |
| Animalia | Reptilia | Scincidae | 9030 | *Calyptotis sp.* | | Unidentified Calyptotis | P | | 2 | |
| Animalia | Reptilia | Scincidae | 2331 | *Cryptoblepharus virgatus* | | Cream-striped Shinning-skink | P | | 1 | |
| Animalia | Reptilia | Scincidae | 2575 | *Cyclodomorphus gerrardii* | | Pink-tongued Lizard | P | | 1 | |
| Animalia | Reptilia | Scincidae | 2450 | *Lampropholis delicata* | | Dark-flecked Garden Sunskink | P | | 20 | |
| Animalia | Reptilia | Scincidae | 2451 | *Lampropholis guichenoti* | | Pale-flecked Garden Sunskink | P | | 6 | |
| Animalia | Reptilia | Scincidae | 2580 | *Tiliqua scincoides* | | Eastern Blue-tongue | P | | 26 | |
| Animalia | Reptilia | Agamidae | 2252 | *Intellagama lesueurii* | | Eastern Water Dragon | P | | 15 | |
| Animalia | Reptilia | Agamidae | 2177 | *Pogona barbata* | | Bearded Dragon | P | | 1 | |
| Animalia | Reptilia | Varanidae | 2283 | *Varanus varius* | | Lace Monitor | P | | 35 | |
| Animalia | Reptilia | Typhlopidae | 2603 | *Anilios proximus* | | Proximus Blind Snake | P | | 1 | |
| Animalia | Reptilia | Pythonidae | 5096 | *Morelia spilota spilota* | | Diamond Python | P | | 2 | |
| Animalia | Reptilia | Colubridae | 2630 | *Boiga irregularis* | | Brown Tree Snake | P | | 1 | |
| Animalia | Reptilia | Colubridae | 2633 | *Dendrelaphis punctulatus* | | Common Tree Snake | P | | 20 | |
| Animalia | Reptilia | Elapidae | 5136 | *Cryptophis nigrescens* | | Eastern Small-eyed Snake | P | | 2 | |
| Animalia | Reptilia | Elapidae | 2655 | *Demansia psammophis* | | Yellow-faced Whip Snake | P | | 1 | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Animalia | Reptilia | Elapidae | 2674 | *Hemiaspis signata* | | Black-bellied Swamp Snake | P | | 1 | |
| Animalia | Reptilia | Elapidae | 2693 | *Pseudechis porphyriacus* | | Red-bellied Black Snake | P | | 40 | |
| Animalia | Reptilia | Elapidae | 2699 | *Pseudonaja textilis* | | Eastern Brown Snake | P | | 4 | |
| Animalia | Reptilia | Elapidae | 2734 | *Vermicella annulata* | | Bandy-bandy | P | | 2 | |
| Animalia | Aves | Phasianidae | 9046 | *Coturnix sp.* | | Unidentified Quail | P | | 1 | |
| Animalia | Aves | Phasianidae | 0011 | *Synoicus ypsilophora* | | Brown Quail | P | | 1 | |
| Animalia | Aves | Anatidae | 0210 | *Anas castanea* | | Chestnut Teal | P | | 5 | |
| Animalia | Aves | Anatidae | 0211 | *Anas gracilis* | | Grey Teal | P | | 3 | |
| Animalia | Aves | Anatidae | 0212 | *Anas rhynchotis* | | Australasian Shoveler | P | | 2 | |
| Animalia | Aves | Anatidae | 0208 | *Anas superciliosa* | | Pacific Black Duck | P | | 20 | |
| Animalia | Aves | Anatidae | 0215 | *Aythya australis* | | Hardhead | P | | 3 | |
| Animalia | Aves | Anatidae | 0202 | *Chenonetta jubata* | | Australian Wood Duck | P | | 15 | |
| Animalia | Aves | Anatidae | 0203 | *Cygnus atratus* | | Black Swan | P | | 1 | |
| Animalia | Aves | Anatidae | 0204 | *Dendrocygna arcuata* | | Wandering Whistling-Duck | P | | 3 | |
| Animalia | Aves | Anatidae | 0213 | *Malacorhynchus membranaceus* | | Pink-eared Duck | P | | 3 | |
| Animalia | Aves | Podicipedidae | 0061 | *Tachybaptus novaehollandiae* | | Australasian Grebe | P | | 1 | |
| Animalia | Aves | Columbidae | 0028 | *Columba leucomela* | | White-headed Pigeon | P | | 15 | |
| Animalia | Aves | Columbidae | 0957 | *Columba livia* | * | Rock Dove | | | 4 | |
| Animalia | Aves | Columbidae | 0032 | *Geopelia humeralis* | | Bar-shouldered Dove | P | | 8 | |
| Animalia | Aves | Columbidae | 9931 | *Geopelia striata* | | Peaceful Dove | P | | 3 | |
| Animalia | Aves | Columbidae | 0044 | *Leucosarcia melanoleuca* | | Wonga Pigeon | P | | 7 | |
| Animalia | Aves | Columbidae | 0027 | *Lopholaimus antarcticus* | | Topknot Pigeon | P | | 1 | |
| Animalia | Aves | Columbidae | 0029 | *Macropygia phasianella* | | Brown Cuckoo-Dove | P | | 8 | |
| Animalia | Aves | Columbidae | 0043 | *Ocyphaps lophotes* | | Crested Pigeon | P | | 20 | |
| Animalia | Aves | Columbidae | 0989 | *Spilopelia chinensis* | * | Spotted Turtle-Dove | | | 11 | |
| Animalia | Aves | Podargidae | 0313 | *Podargus strigoides* | | Tawny Frogmouth | P | | 57 | |
| Animalia | Aves | Caprimulgidae | 0330 | *Eurostopodus mystacalis* | | White-throated Nightjar | P | | 1 | |
| Animalia | Aves | Aegothelidae | 0317 | *Aegotheles cristatus* | | Australian Owlet-nightjar | P | | 18 | |
| Animalia | Aves | Apodidae | 0334 | *Hirundapus caudacutus* | | White-throated Needletail | P | V,C,J,K | 6 | |
| Animalia | Aves | Sulidae | 0104 | *Morus serrator* | | Australasian Gannet | P | | 1 | |
| Animalia | Aves | Anhingidae | 8731 | *Anhinga novaehollandiae* | | Australasian Darter | P | | 2 | |
| Animalia | Aves | Phalacrocoracidae | 0100 | *Microcarbo melanoleucos* | | Little Pied Cormorant | P | | 6 | |
| Animalia | Aves | Phalacrocoracidae | 0097 | *Phalacrocorax sulcirostris* | | Little Black Cormorant | P | | 4 | |
| Animalia | Aves | Pelecanidae | 0106 | *Pelecanus conspicillatus* | | Australian Pelican | P | | 5 | |
| Animalia | Aves | Ciconiidae | 0183 | *Ephippiorhynchus asiaticus* | | Black-necked Stork | E1,P | | 24 | |
| Animalia | Aves | Ardeidae | 0186 | *Ardea intermedia* | | Intermediate Egret | P | | 3 | |
| Animalia | Aves | Ardeidae | T179 | *Ardea/Egretta sp.* | | Unidentified Egret | P | | 2 | |
| Animalia | Aves | Ardeidae | 0977 | *Bubulcus ibis* | | Cattle Egret | P | | 17 | |
| Animalia | Aves | Ardeidae | 8712 | *Casmerodius modesta* | | Eastern Great Egret | P | | 3 | |
| Animalia | Aves | Ardeidae | 0185 | *Egretta garzetta* | | Little Egret | P | | 2 | |
| Animalia | Aves | Ardeidae | 0188 | *Egretta novaehollandiae* | | White-faced Heron | P | | 8 | |
| Animalia | Aves | Ardeidae | 0196 | *Ixobrychus flavicollis* | | Black Bittern | V,P | | 1 | |
| Animalia | Aves | Threskiornithidae | 0181 | *Platalea regia* | | Royal Spoonbill | P | | 4 | |
| Animalia | Aves | Threskiornithidae | 0178 | *Plegadis falcinellus* | | Glossy Ibis | P | | 1 | |
| Animalia | Aves | Threskiornithidae | 0179 | *Threskiornis moluccus* | | Australian White Ibis | P | | 19 | |
| Animalia | Aves | Threskiornithidae | 0180 | *Threskiornis spinicollis* | | Straw-necked Ibis | P | | 3 | |
| Animalia | Aves | Accipitridae | 0222 | *Accipiter cirrocephalus* | | Collared Sparrowhawk | P | | 1 | |
| Animalia | Aves | Accipitridae | 0221 | *Accipiter fasciatus* | | Brown Goshawk | P | | 2 | |
| Animalia | Aves | Accipitridae | 0220 | *Accipiter novaehollandiae* | | Grey Goshawk | P | | 2 | |
| Animalia | Aves | Accipitridae | 0224 | *Aquila audax* | | Wedge-tailed Eagle | P | | 4 | |
| Animalia | Aves | Accipitridae | 0234 | *Aviceda subcristata* | | Pacific Baza | P | | 2 | |
| Animalia | Aves | Accipitridae | 0219 | *Circus approximans* | | Swamp Harrier | P | | 1 | |
| Animalia | Aves | Accipitridae | 0232 | *Elanus axillaris* | | Black-shouldered Kite | P | | 6 | |
| Animalia | Aves | Accipitridae | 0226 | *Haliaeetus leucogaster* | | White-bellied Sea-Eagle | V,P | | 8 | |
| Animalia | Aves | Accipitridae | 0227 | *Haliastur indus* | | Brahminy Kite | P | | 6 | |
| Animalia | Aves | Accipitridae | 0228 | *Haliastur sphenurus* | | Whistling Kite | P | | 2 | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Animalia | Aves | Accipitridae | 0230 | ^^*Lophoictinia isura* | Square-tailed Kite | V,P,3 | | 3 |  |
| Animalia | Aves | Accipitridae | 8739 | ^^*Pandion cristatus* | Eastern Osprey | V,P,3 | | 23 |  |
| Animalia | Aves | Falconidae | 0235 | *Falco longipennis* | Australian Hobby | P | | 1 | |
| Animalia | Aves | Gruidae | 0177 | *Grus rubicunda* | Brolga | V,P | | 5 |  |
| Animalia | Aves | Rallidae | 0059 | *Fulica atra* | Eurasian Coot | P | | 2 | |
| Animalia | Aves | Rallidae | 0056 | *Gallinula tenebrosa* | Dusky Moorhen | P | | 7 | |
| Animalia | Aves | Rallidae | 0046 | *Hypotaenidia philippensis* | Buff-banded Rail | P | | 3 | |
| Animalia | Aves | Rallidae | 0045 | *Lewinia pectoralis* | Lewin's Rail | P | | 1 | |
| Animalia | Aves | Rallidae | 0058 | *Porphyrio porphyrio* | Purple Swamphen | P | | 6 | |
| Animalia | Aves | Haematopodidae | 0130 | *Haematopus longirostris* | Pied Oystercatcher | E1,P | | 1 |  |
| Animalia | Aves | Recurvirostridae | 0146 | *Himantopus himantopus* | Black-winged Stilt | P | | 1 | |
| Animalia | Aves | Charadriidae | 0132 | *Erythrogonys cinctus* | Red-kneed Dotterel | P | | 8 | |
| Animalia | Aves | Charadriidae | 8006 | *Pluvialis fulva* | Pacific Golden Plover | P | C,J,K | 1 | |
| Animalia | Aves | Charadriidae | 0133 | *Vanellus miles* | Masked Lapwing | P | | 13 | |
| Animalia | Aves | Charadriidae | 0135 | *Vanellus tricolor* | Banded Lapwing | P | | 1 | |
| Animalia | Aves | Scolopacidae | 0163 | *Calidris acuminata* | Sharp-tailed Sandpiper | P | C,J,K | 1 | |
| Animalia | Aves | Scolopacidae | 0168 | *Gallinago hardwickii* | Latham's Snipe | P | J,K | 1 | |
| Animalia | Aves | Scolopacidae | 0158 | *Tringa nebularia* | Common Greenshank | P | C,J,K | 1 | |
| Animalia | Aves | Glareolidae | 0172 | *Glareola maldivarum* | Oriental Pratincole | P | C,J,K | 1 | |
| Animalia | Aves | Laridae | 0110 | *Chlidonias hybrida* | Whiskered Tern | P | | 1 | |
| Animalia | Aves | Laridae | 0125 | *Chroicocephalus novaehollandiae* | Silver Gull | P | | 1 | |
| Animalia | Aves | Laridae | 0115 | *Thalasseus bergii* | Crested Tern | P | J | 2 | |
| Animalia | Aves | Cacatuidae | 0269 | *Cacatua galerita* | Sulphur-crested Cockatoo | P | | 1 | |
| Animalia | Aves | Cacatuidae | 0265 | ^*Calyptorhynchus lathami* | Glossy Black-Cockatoo | V,P,2 | V | 28 |  |
| Animalia | Aves | Cacatuidae | 0273 | *Eolophus roseicapilla* | Galah | P | | 17 | |
| Animalia | Aves | Cacatuidae | 0274 | *Nymphicus hollandicus* | Cockatiel | P | | 1 | |
| Animalia | Aves | Cacatuidae | 0267 | *Zanda funereus* | Yellow-tailed Black-Cockatoo | P | | 8 | |
| Animalia | Aves | Psittacidae | 0281 | *Alisterus scapularis* | Australian King-Parrot | P | | 7 | |
| Animalia | Aves | Psittacidae | 0260 | *Glossopsitta pusilla* | Little Lorikeet | V,P | | 4 |  |
| Animalia | Aves | Psittacidae | 0282 | *Platycercus elegans* | Crimson Rosella | P | | 2 | |
| Animalia | Aves | Psittacidae | 0288 | *Platycercus eximius* | Eastern Rosella | P | | 22 | |
| Animalia | Aves | Psittacidae | 0295 | *Psephotus haematonotus* | Red-rumped Parrot | P | | 2 | |
| Animalia | Aves | Psittacidae | 0256 | *Trichoglossus chlorolepidotus* | Scaly-breasted Lorikeet | P | | 23 | |
| Animalia | Aves | Psittacidae | 9947 | *Trichoglossus haematodus* | Rainbow Lorikeet | P | | 55 | |
| Animalia | Aves | Psittacidae | 8882 | *Trichoglossus haematodus moluccanus* | | P | | 1 | |
| Animalia | Aves | Psittacidae | 9076 | *Trichoglossus/Glossopsitta sp.* | Unidentified Lorikeet | P | | 1 | |
| Animalia | Aves | Cuculidae | 0338 | *Cacomantis flabelliformis* | Fan-tailed Cuckoo | P | | 5 | |
| Animalia | Aves | Cuculidae | 0339 | *Cacomantis variolosus* | Brush Cuckoo | P | | 4 | |
| Animalia | Aves | Cuculidae | 0349 | *Centropus phasianinus* | Pheasant Coucal | P | | 10 | |
| Animalia | Aves | Cuculidae | 0342 | *Chalcites basalis* | Horsfield's Bronze-Cuckoo | P | | 2 | |
| Animalia | Aves | Cuculidae | 0343 | *Chalcites lucidus* | Shining Bronze-Cuckoo | P | | 2 | |
| Animalia | Aves | Cuculidae | 0345 | *Chalcites minutillus* | Little Bronze-Cuckoo | P | | 1 | |
| Animalia | Aves | Cuculidae | 0347 | *Eudynamys orientalis* | Eastern Koel | P | | 10 | |
| Animalia | Aves | Cuculidae | 0337 | *Heteroscenes pallidus* | Pallid Cuckoo | P | | 1 | |
| Animalia | Aves | Strigidae | 9922 | *Ninox novaeseelandiae* | Southern Boobook | P | | 3 | |
| Animalia | Aves | Strigidae | 0248 | ^^*Ninox strenua* | Powerful Owl | V,P,3 | | 5 |  |
| Animalia | Aves | Tytonidae | 9923 | *Tyto javanica* | Eastern Barn Owl | P | | 6 | |
| Animalia | Aves | Tytonidae | 0252 | ^^*Tyto longimembris* | Eastern Grass Owl | V,P,3 | | 1 |  |
| Animalia | Aves | Tytonidae | 0250 | ^^*Tyto novaehollandiae* | Masked Owl | V,P,3 | | 3 |  |
| Animalia | Aves | Alcedinidae | 0319 | *Ceyx azureus* | Azure Kingfisher | P | | 6 | |
| Animalia | Aves | Alcedinidae | 0322 | *Dacelo novaeguineae* | Laughing Kookaburra | P | | 70 | |
| Animalia | Aves | Alcedinidae | 0324 | *Todiramphus macleayii* | Forest Kingfisher | P | | 3 | |
| Animalia | Aves | Alcedinidae | 0326 | *Todiramphus sanctus* | Sacred Kingfisher | P | | 9 | |
| Animalia | Aves | Meropidae | 0329 | *Merops ornatus* | Rainbow Bee-eater | P | | 6 | |
| Animalia | Aves | Coraciidae | 0318 | *Eurystomus orientalis* | Dollarbird | P | | 8 | |
| Animalia | Aves | Menuridae | 0350 | *Menura novaehollandiae* | Superb Lyrebird | P | | 1 | |
| Animalia | Aves | Climacteridae | 0558 | *Cormobates leucophaea* | White-throated Treecreeper | P | | 11 | |
| Animalia | Aves | Ptilonorhynchidae | 0676 | *Ailuroedus crassirostris* | Green Catbird | P | | 6 | |

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|---|---|---|---|---|---|---|---|---|---|
| Animalia | Aves | Ptilonorhynchidae | 0679 | *Ptilonorhynchus violaceus* | Satin Bowerbird | P | | 17 | |
| Animalia | Aves | Maluridae | 0529 | *Malurus cyaneus* | Superb Fairy-wren | P | | 16 | |
| Animalia | Aves | Maluridae | 0536 | *Malurus lamberti* | Variegated Fairy-wren | P | | 6 | |
| Animalia | Aves | Maluridae | 0541 | *Malurus melanocephalus* | Red-backed Fairy-wren | P | | 4 | |
| Animalia | Aves | Acanthizidae | 0470 | *Acanthiza lineata* | Striated Thornbill | P | | 8 | |
| Animalia | Aves | Acanthizidae | 0471 | *Acanthiza nana* | Yellow Thornbill | P | | 5 | |
| Animalia | Aves | Acanthizidae | 0475 | *Acanthiza pusilla* | Brown Thornbill | P | | 10 | |
| Animalia | Aves | Acanthizidae | 0460 | *Gerygone levigaster* | Mangrove Gerygone | P | | 1 | |
| Animalia | Aves | Acanthizidae | 0454 | *Gerygone mouki* | Brown Gerygone | P | | 6 | |
| Animalia | Aves | Acanthizidae | 0453 | *Gerygone olivacea* | White-throated Gerygone | P | | 4 | |
| Animalia | Aves | Acanthizidae | 0488 | *Sericornis frontalis* | White-browed Scrubwren | P | | 12 | |
| Animalia | Aves | Acanthizidae | 0494 | *Sericornis magnirostra* | Large-billed Scrubwren | P | | 1 | |
| Animalia | Aves | Pardalotidae | 0565 | *Pardalotus punctatus* | Spotted Pardalote | P | | 1 | |
| Animalia | Aves | Pardalotidae | 0976 | *Pardalotus striatus* | Striated Pardalote | P | | 2 | |
| Animalia | Aves | Meliphagidae | 0591 | *Acanthorhynchus tenuirostris* | Eastern Spinebill | P | | 9 | |
| Animalia | Aves | Meliphagidae | 0638 | *Anthochaera carunculata* | Red Wattlebird | P | | 4 | |
| Animalia | Aves | Meliphagidae | 0710 | *Anthochaera chrysoptera* | Little Wattlebird | P | | 7 | |
| Animalia | Aves | Meliphagidae | 0603 | *Anthochaera phrygia* | Regent Honeyeater | E4A,P | CE | 1 | |
| Animalia | Aves | Meliphagidae | 0614 | *Caligavis chrysops* | Yellow-faced Honeyeater | P | | 7 | |
| Animalia | Aves | Meliphagidae | 0641 | *Entomyzon cyanotis* | Blue-faced Honeyeater | P | | 5 | |
| Animalia | Aves | Meliphagidae | 0597 | *Lichmera indistincta* | Brown Honeyeater | P | | 3 | |
| Animalia | Aves | Meliphagidae | 0634 | *Manorina melanocephala* | Noisy Miner | P | | 27 | |
| Animalia | Aves | Meliphagidae | 0605 | *Meliphaga lewinii* | Lewin's Honeyeater | P | | 27 | |
| Animalia | Aves | Meliphagidae | 0586 | *Myzomela sanguinolenta* | Scarlet Honeyeater | P | | 15 | |
| Animalia | Aves | Meliphagidae | 0645 | *Philemon corniculatus* | Noisy Friarbird | P | | 6 | |
| Animalia | Aves | Meliphagidae | 0632 | *Phylidonyris niger* | White-cheeked Honeyeater | P | | 8 | |
| Animalia | Aves | Meliphagidae | 0585 | *Plectorhyncha lanceolata* | Striped Honeyeater | P | | 2 | |
| Animalia | Aves | Psophodidae | 0421 | *Psophodes olivaceus* | Eastern Whipbird | P | | 19 | |
| Animalia | Aves | Neosittidae | 0549 | *Daphoenositta chrysoptera* | Varied Sittella | V,P | | 1 | |
| Animalia | Aves | Campephagidae | 0424 | *Coracina novaehollandiae* | Black-faced Cuckoo-shrike | P | | 15 | |
| Animalia | Aves | Campephagidae | 0429 | *Edolisoma tenuirostris* | Cicadabird | P | | 1 | |
| Animalia | Aves | Campephagidae | 0430 | *Lalage sueurii* | White-winged Triller | P | | 1 | |
| Animalia | Aves | Pachycephalidae | 0408 | *Colluricincla harmonica* | Grey Shrike-thrush | P | | 11 | |
| Animalia | Aves | Pachycephalidae | 0413 | *Colluricincla megarhyncha* | Little Shrike-thrush | P | | 1 | |
| Animalia | Aves | Pachycephalidae | 0398 | *Pachycephala pectoralis* | Golden Whistler | P | | 11 | |
| Animalia | Aves | Pachycephalidae | 0401 | *Pachycephala rufiventris* | Rufous Whistler | P | | 9 | |
| Animalia | Aves | Oriolidae | 0671 | *Oriolus sagittatus* | Olive-backed Oriole | P | | 11 | |
| Animalia | Aves | Oriolidae | 0432 | *Sphecotheres vieilloti* | Australasian Figbird | P | | 23 | |
| Animalia | Aves | Artamidae | 0543 | *Artamus leucoryn* | White-breasted Woodswallow | P | | 2 | |
| Animalia | Aves | Artamidae | 0700 | *Cracticus nigrogularis* | Pied Butcherbird | P | | 11 | |
| Animalia | Aves | Artamidae | T022 | *Cracticus sp.* | Unidentified Butcherbird | P | | 1 | |
| Animalia | Aves | Artamidae | 0702 | *Cracticus torquatus* | Grey Butcherbird | P | | 13 | |
| Animalia | Aves | Artamidae | 0705 | *Gymnorhina tibicen* | Australian Magpie | P | | 66 | |
| Animalia | Aves | Artamidae | 0694 | *Strepera graculina* | Pied Currawong | P | | 6 | |
| Animalia | Aves | Dicruridae | 0673 | *Dicrurus bracteatus* | Spangled Drongo | P | | 5 | |
| Animalia | Aves | Rhipiduridae | 0361 | *Rhipidura albiscapa* | Grey Fantail | P | | 21 | |
| Animalia | Aves | Rhipiduridae | 0364 | *Rhipidura leucophrys* | Willie Wagtail | P | | 13 | |
| Animalia | Aves | Rhipiduridae | 0362 | *Rhipidura rufifrons* | Rufous Fantail | P | | 7 | |
| Animalia | Aves | Corvidae | 0930 | *Corvus coronoides* | Australian Raven | P | | 10 | |
| Animalia | Aves | Corvidae | 9902 | *Corvus orru* | Torresian Crow | P | | 6 | |
| Animalia | Aves | Monarchidae | 0415 | *Grallina cyanoleuca* | Magpie-lark | P | | 34 | |
| Animalia | Aves | Monarchidae | 0373 | *Monarcha melanopsis* | Black-faced Monarch | P | | 3 | |
| Animalia | Aves | Monarchidae | 0365 | *Myiagra rubecula* | Leaden Flycatcher | P | | 6 | |
| Animalia | Aves | Petroicidae | 0392 | *Eopsaltria australis* | Eastern Yellow Robin | P | | 22 | |
| Animalia | Aves | Petroicidae | 0377 | *Microeca fascinans* | Jacky Winter | P | | 1 | |
| Animalia | Aves | Petroicidae | 0384 | *Petroica rosea* | Rose Robin | P | | 1 | |
| Animalia | Aves | Cisticolidae | 0525 | *Cisticola exilis* | Golden-headed Cisticola | P | | 2 | |

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|---|---|---|---|---|---|---|---|---|---|---|
| Animalia | Aves | Locustellidae | 0508 | *Cincloramphus cruralis* | | Brown Songlark | P | | 1 | |
| Animalia | Aves | Locustellidae | 0509 | *Cincloramphus mathewsi* | | Rufous Songlark | P | | 2 | |
| Animalia | Aves | Hirundinidae | 0357 | *Hirundo neoxena* | | Welcome Swallow | P | | 20 | |
| Animalia | Aves | Turdidae | 0779 | *Zoothera lunulata* | | Bassian Thrush | P | | 1 | |
| Animalia | Aves | Sturnidae | 0999 | *Sturnus vulgaris* | * | Common Starling | | | 1 | |
| Animalia | Aves | Zosteropidae | 0574 | *Zosterops lateralis* | | Silvereye | P | | 5 | |
| Animalia | Aves | Dicaeidae | 0564 | *Dicaeum hirundinaceum* | | Mistletoebird | P | | 7 | |
| Animalia | Aves | Estrildidae | 0662 | *Neochmia temporalis* | | Red-browed Finch | P | | 12 | |
| Animalia | Aves | Passeridae | 0995 | *Passer domesticus* | * | House Sparrow | | | 2 | |
| Animalia | Aves | Fringillidae | 0996 | *Carduelis carduelis* | * | European Goldfinch | | | 1 | |
| Animalia | Mammalia | Ornithorhynchidae | 1001 | *Ornithorhynchus anatinus* | | Platypus | P | | 1 | |
| Animalia | Mammalia | Tachyglossidae | 1003 | *Tachyglossus aculeatus* | | Short-beaked Echidna | P | | 43 | |
| Animalia | Mammalia | Dasyuridae | 1956 | *Antechinus mimetes* | | Mainland Dusky Antechinus | P | | 1 | |
| Animalia | Mammalia | Dasyuridae | T093 | *Antechinus sp.* | | Unidentified Antechinus | P | | 6 | |
| Animalia | Mammalia | Dasyuridae | 1674 | *Antechinus stuartii* | | Brown Antechinus | P | | 21 | |
| Animalia | Mammalia | Dasyuridae | T105 | *Dasyuridae sp.* | | unidentified dasyurid | P | | 4 | |
| Animalia | Mammalia | Dasyuridae | 1008 | *Dasyurus maculatus* | | Spotted-tailed Quoll | V,P | E | 3 | |
| Animalia | Mammalia | Dasyuridae | 1017 | *Phascogale tapoatafa* | | Brush-tailed Phascogale | V,P | | 6 | |
| Animalia | Mammalia | Peramelidae | 1093 | *Isoodon macrourus* | | Northern Brown Bandicoot | P | | 17 | |
| Animalia | Mammalia | Peramelidae | T081 | *Isoodon/Perameles sp.* | | unidentified Bandicoot | P | | 23 | |
| Animalia | Mammalia | Peramelidae | 1097 | *Perameles nasuta* | | Long-nosed Bandicoot | P | | 27 | |
| Animalia | Mammalia | Phascolarctidae | 1162 | *Phascolarctos cinereus* | | Koala | E1,P | E | 45 | |
| Animalia | Mammalia | Petauridae | 1136 | *Petaurus australis* | | Yellow-bellied Glider | V,P | V | 53 | |
| Animalia | Mammalia | Petauridae | 1138 | *Petaurus breviceps* | | Sugar Glider | P | | 45 | |
| Animalia | Mammalia | Petauridae | 1137 | *Petaurus norfolcensis* | | Squirrel Glider | V,P | | 1 | |
| Animalia | Mammalia | Pseudocheiridae | 1129 | *Pseudocheirus peregrinus* | | Common Ringtail Possum | P | | 14 | |
| Animalia | Mammalia | Acrobatidae | 1147 | *Acrobates pygmaeus* | | Feathertail Glider | P | | 6 | |
| Animalia | Mammalia | Phalangeridae | 1735 | *Trichosurus caninus* | | Short-eared Possum | P | | 98 | |
| Animalia | Mammalia | Phalangeridae | T082 | *Trichosurus sp.* | | brushtail possum | P | | 21 | |
| Animalia | Mammalia | Phalangeridae | 1113 | *Trichosurus vulpecula* | | Common Brushtail Possum | P | | 24 | |
| Animalia | Mammalia | Macropodidae | T108 | *Macropod sp.* | | unidentified macropod | P | | 3 | |
| Animalia | Mammalia | Macropodidae | 1265 | *Macropus giganteus* | | Eastern Grey Kangaroo | P | | 19 | |
| Animalia | Mammalia | Macropodidae | T085 | *Macropus sp.* | | kangaroo / wallaby | P | | 19 | |
| Animalia | Mammalia | Macropodidae | 1261 | *Notamacropus rufogriseus* | | Red-necked Wallaby | P | | 46 | |
| Animalia | Mammalia | Macropodidae | 1236 | *Thylogale thetis* | | Red-necked Pademelon | P | | 2 | |
| Animalia | Mammalia | Macropodidae | 1242 | *Wallabia bicolor* | | Swamp Wallaby | P | | 784 | |
| Animalia | Mammalia | Pteropodidae | 1282 | *Pteropus alecto* | | Black Flying-fox | P | | 19 | |
| Animalia | Mammalia | Pteropodidae | 1280 | *Pteropus poliocephalus* | | Grey-headed Flying-fox | V,P | V | 59 | |
| Animalia | Mammalia | Pteropodidae | 1281 | *Pteropus scapulatus* | | Little Red Flying-fox | P | | 3 | |
| Animalia | Mammalia | Pteropodidae | T087 | *Pteropus sp.* | | Flying-fox | P | | 2 | |
| Animalia | Mammalia | Pteropodidae | 1294 | *Syconycteris australis* | | Common Blossom-bat | V,P | | 2 | |
| Animalia | Mammalia | Rhinolophidae | 1303 | *Rhinolophus megaphyllus* | | Eastern Horseshoe-bat | P | | 2 | |
| Animalia | Mammalia | Molossidae | 1329 | *Micronomus norfolkensis* | | Eastern Coastal Free-tailed Bat | V,P | | 9 | |
| Animalia | Mammalia | Molossidae | 1938 | *Ozimops ridei* | | Eastern Free-tailed Bat | P | | 6 | |
| Animalia | Mammalia | Vespertilionidae | 1349 | *Chalinolobus gouldii* | | Gould's Wattled Bat | P | | 9 | |
| Animalia | Mammalia | Vespertilionidae | 1351 | *Chalinolobus morio* | | Chocolate Wattled Bat | P | | 1 | |
| Animalia | Mammalia | Vespertilionidae | 1357 | *Myotis macropus* | | Southern Myotis | V,P | | 4 | |
| Animalia | Mammalia | Vespertilionidae | 1335 | *Nyctophilus geoffroyi* | | Lesser Long-eared Bat | P | | 8 | |
| Animalia | Mammalia | Vespertilionidae | 1334 | *Nyctophilus gouldi* | | Gould's Long-eared Bat | P | | 6 | |
| Animalia | Mammalia | Vespertilionidae | T092 | *Nyctophilus sp.* | | long-eared bat | P | | 2 | |
| Animalia | Mammalia | Vespertilionidae | 1361 | *Scoteanax rueppellii* | | Greater Broad-nosed Bat | V,P | | 2 | |
| Animalia | Mammalia | Vespertilionidae | 1365 | *Scotorepens orion* | | Eastern Broad-nosed Bat | P | | 2 | |
| Animalia | Mammalia | Vespertilionidae | T089 | *Scotorepens sp.* | | Unidentified broad-nosed bat | P | | 1 | |
| Animalia | Mammalia | Vespertilionidae | 1022 | *Vespadelus darlingtoni* | | Large Forest Bat | P | | 2 | |

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|---|---|---|---|---|---|---|---|---|
| Animalia | Mammalia | Vespertilionidae | 1377 | *Vespadelus pumilus* | | Eastern Forest Bat | P | 7 |
| Animalia | Mammalia | Vespertilionidae | 1379 | *Vespadelus vulturnus* | | Little Forest Bat | P | 9 |
| Animalia | Mammalia | Miniopteridae | 1346 | *Miniopterus australis* | | Little Bent-winged Bat | V,P | 15 |
| Animalia | Mammalia | Miniopteridae | 3330 | *Miniopterus orianae oceanensis* | | Large Bent-winged Bat | V,P | 8 |
| Animalia | Mammalia | Muridae | 1415 | *Hydromys chrysogaster* | | Water-rat | P | 1 |
| Animalia | Mammalia | Muridae | 1497 | *Melomys cervinipes* | | Fawn-footed Melomys | P | 12 |
| Animalia | Mammalia | Muridae | 1412 | *Mus musculus* | * | House Mouse | | 6 |
| Animalia | Mammalia | Muridae | 1395 | *Rattus fuscipes* | | Bush Rat | P | 19 |
| Animalia | Mammalia | Muridae | 1398 | *Rattus lutreolus* | | Swamp Rat | P | 4 |
| Animalia | Mammalia | Muridae | 1408 | *Rattus rattus* | * | Black Rat | | 19 |
| Animalia | Mammalia | Muridae | T094 | *Rattus sp.* | | rat | P | 167 |
| Animalia | Mammalia | Canidae | 1905 | *Canis familiaris* | * | Dog | | 1 |
| Animalia | Mammalia | Canidae | 1531 | *Canis lupus* | * | Dingo, domestic dog | | 8 |
| Animalia | Mammalia | Canidae | 1532 | *Vulpes vulpes* | * | Fox | | 55 |
| Animalia | Mammalia | Felidae | 1536 | *Felis catus* | * | Cat | | 11 |
| Animalia | Mammalia | Leporidae | 1929 | *Lepus capensis occidentalis* | * | Brown Hare | | 2 |
| Animalia | Mammalia | Leporidae | 1510 | *Oryctolagus cuniculus* | * | Rabbit | | 3 |
| Animalia | Mammalia | Cervidae | 9112 | *Cervus sp.* | * | Unidentified Deer | | 7 |
| Animalia | Insecta | Hesperiidae | I023 | *Ocybadistes knightorum* | | Black Grass-dart Butterfly | E1 | 13 |
| Animalia | Unknown | Unknown Fauna | T350 | *Fauna sp.* | | Unidentified Fauna | | 4 |
| Animalia | Unknown | Unknown Fauna | T351 | *Mammal sp.* | | Unidentified Mammal | | 1 |
| Animalia | Unknown | Unknown Fauna | T353 | *Small mammal sp.* | | Unidentified small mammal (<500g) | | 13 |
| Plantae | Flora | Acanthaceae | 10427 | *Avicennia marina subsp. australasica* | | Grey Mangrove | | 4 |
| Plantae | Flora | Acanthaceae | 1003 | *Brunoniella australis* | | Blue Trumpet | | 1 |
| Plantae | Flora | Acanthaceae | 1004 | *Brunoniella pumilio* | | Dwarf Blue Trumpet | | 1 |
| Plantae | Flora | Acanthaceae | 1010 | *Pseuderanthemum variabile* | | Pastel Flower | | 14 |
| Plantae | Flora | Aizoaceae | 3907 | *Macarthuria neocambrica* | | | | 2 |
| Plantae | Flora | Aizoaceae | 11185 | *Tetragonia tetragonioides* | | New Zealand Spinach | | 1 |
| Plantae | Flora | Alismataceae | 6493 | *Alisma lanceolatum* | * | | | 1 |
| Plantae | Flora | Alliaceae | 10418 | *Agapanthus praecox subsp. orientalis* | * | | | 1 |
| Plantae | Flora | Amaranthaceae | 6478 | *Alternanthera denticulata* | | Lesser Joyweed | | 5 |
| Plantae | Flora | Amaranthaceae | 1050 | *Alternanthera philoxeroides* | * | Alligator Weed | | 1 |
| Plantae | Flora | Amaryllidaceae | 3539 | *Crinum pedunculatum* | | Swamp Lily | | 4 |
| Plantae | Flora | Anacardiaceae | 7734 | *Euroschinus falcatus var. falcatus* | | Ribbonwood | | 4 |
| Plantae | Flora | Anacardiaceae | 9351 | *Mangifera indica* | * | Mango | | 2 |
| Plantae | Flora | Anthericaceae | 7183 | *Caesia parviflora var. parviflora* | | | | 1 |
| Plantae | Flora | Anthericaceae | 3567 | *Sowerbaea juncea* | | Vanilla Plant | | 1 |
| Plantae | Flora | Anthericaceae | 3574 | *Thysanotus tuberosus* | | Common Fringe-lily | | 2 |
| Plantae | Flora | Apiaceae | 1106 | *Centella asiatica* | | Indian Pennywort | | 15 |
| Plantae | Flora | Apiaceae | 11195 | *Cyclospermum leptophyllum* | * | Slender Celery | | 1 |
| Plantae | Flora | Apiaceae | 1109 | *Daucus glochidiatus* | | Native Carrot | | 1 |
| Plantae | Flora | Apiaceae | 1118 | *Foeniculum vulgare* | * | Fennel | | 1 |
| Plantae | Flora | Apiaceae | 1123 | *Hydrocotyle bonariensis* | * | | | 2 |
| Plantae | Flora | Apiaceae | 1128 | *Hydrocotyle laxiflora* | | Stinking Pennywort | | 1 |
| Plantae | Flora | Apiaceae | 7961 | *Hydrocotyle sibthorpioides* | | | | 3 |
| Plantae | Flora | Apiaceae | HYDR | *Hydrocotyle spp.* | | | | 2 |
| Plantae | Flora | Apiaceae | 1132 | *Hydrocotyle tripartita* | | Pennywort | | 7 |
| Plantae | Flora | Apiaceae | 1133 | *Hydrocotyle verticillata* | | Shield Pennywort | | 1 |
| Plantae | Flora | Apocynaceae | 1167 | *Alyxia ruscifolia* | | Prickly Alyxia | | 1 |
| Plantae | Flora | Apocynaceae | 11047 | *Araujia sericifera* | * | Moth Vine | | 1 |
| Plantae | Flora | Apocynaceae | 1227 | *Gomphocarpus fruticosus* | * | Narrow-leaved Cotton Bush | | 1 |
| Plantae | Flora | Apocynaceae | 1228 | *Gomphocarpus physocarpus* | * | Balloon Cotton Bush | | 7 |

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|---|---|---|---|---|---|---|---|---|---|---|
| Plantae | Flora | Apocynaceae | 1233 | *Marsdenia longiloba* | | Slender Marsdenia | E1 | V | 198 | |
| Plantae | Flora | Apocynaceae | 1234 | *Marsdenia rostrata* | | Milk Vine | | | 2 | |
| Plantae | Flora | Apocynaceae | MARS | *Marsdenia spp.* | | | | | 7 | |
| Plantae | Flora | Apocynaceae | 1172 | *Melodinus australis* | | Southern Melodinus | | | 1 | |
| Plantae | Flora | Apocynaceae | 1185 | *Parsonsia straminea* | | Common Silkpod | | | 29 | |
| Plantae | Flora | Apocynaceae | 8620 | *Tabernaemontana pandacaqui* | | Banana Bush | | | 11 | |
| Plantae | Flora | Apocynaceae | 11745 | *Trachelospermum jasminoides* | * | | | | 1 | |
| Plantae | Flora | Apocynaceae | 1245 | *Tylophora woollsii* | | Cryptic Forest Twiner | E1 | E | 1 | |
| Plantae | Flora | Araceae | 8672 | *Alocasia brisbanensis* | | Cunjevoi | | | 3 | |
| Plantae | Flora | Araceae | 1195 | *Gymnostachys anceps* | | Settler's Twine | | | 5 | |
| Plantae | Flora | Araliaceae | 1202 | *Astrotricha latifolia* | | | | | 2 | |
| Plantae | Flora | Araliaceae | 1206 | *Cephalaralia cephalobotrys* | | Climbing Panax | | | 1 | |
| Plantae | Flora | Araliaceae | 1211 | *Polyscias sambucifolia* | | Elderberry Panax | | | 22 | |
| Plantae | Flora | Araliaceae | 8701 | *Schefflera actinophylla* | * | Umbrella Tree | | | 2 | |
| Plantae | Flora | Araliaceae | 1154 | *Trachymene incisa* | | Trachymene | | | 2 | |
| Plantae | Flora | Araliaceae | 8785 | *Trachymene incisa subsp. incisa* | | | | | 1 | |
| Plantae | Flora | Araucariaceae | 1213 | *Araucaria cunninghamii* | | Hoop Pine | | | 1 | |
| Plantae | Flora | Arecaceae | 6458 | *Archontophoenix cunninghamiana* | | Bangalow Palm | P | | 8 | |
| Plantae | Flora | Arecaceae | 1215 | *Calamus muelleri* | | Southern Lawyer Cane | P | | 1 | |
| Plantae | Flora | Arecaceae | 11671 | *Dypsis lutescens* | * | Yellow Butterfly Palm | | | 1 | |
| Plantae | Flora | Arecaceae | 1221 | *Livistona australis* | | Cabbage Palm | P | | 27 | |
| Plantae | Flora | Asparagaceae | 11784 | *Asparagus aethiopicus* | * | Asparagus Fern | | | 5 | |
| Plantae | Flora | Asphodelaceae | 3540 | *Dianella caerulea* | | Blue Flax-lily | | | 21 | |
| Plantae | Flora | Asphodelaceae | 6700 | *Dianella caerulea var. caerulea* | | | | | 1 | |
| Plantae | Flora | Asphodelaceae | 7337 | *Dianella caerulea var. producta* | | | | | 2 | |
| Plantae | Flora | Aspleniaceae | 8031 | *Asplenium australasicum* | | Bird's Nest Fern | P | | 3 | |
| Plantae | Flora | Asteliaceae | 1018 | *Cordyline stricta* | | Narrow-leaved Palm Lily | P | | 22 | |
| Plantae | Flora | Asteraceae | 1255 | *Ageratina adenophora* | * | Crofton Weed | | | 2 | |
| Plantae | Flora | Asteraceae | 1258 | *Ageratum houstonianum* | * | | | | 8 | |
| Plantae | Flora | Asteraceae | 1259 | *Ambrosia artemisiifolia* | * | Annual Ragweed | | | 2 | |
| Plantae | Flora | Asteraceae | 1280 | *Aster subulatus* | * | Wild Aster | | | 2 | |
| Plantae | Flora | Asteraceae | 1281 | *Baccharis halimifolia* | * | Groundsel Bush | | | 15 | |
| Plantae | Flora | Asteraceae | 1283 | *Bidens pilosa* | * | Cobbler's Pegs | | | 7 | |
| Plantae | Flora | Asteraceae | BIDE | *Bidens spp.* | * | | | | 1 | |
| Plantae | Flora | Asteraceae | 1284 | *Bidens subalternans* | * | Greater Beggar's Ticks | | | 1 | |
| Plantae | Flora | Asteraceae | CASI | *Cassinia spp.* | | | | | 2 | |
| Plantae | Flora | Asteraceae | 1392 | *Chrysanthemoides monilifera* | * | | | | 3 | |
| Plantae | Flora | Asteraceae | 8686 | *Chrysanthemoides monilifera subsp. rotundata* | * | Bitou Bush | | | 5 | |
| Plantae | Flora | Asteraceae | 1400 | *Cirsium vulgare* | * | Spear Thistle | | | 6 | |
| Plantae | Flora | Asteraceae | 1404 | *Conyza bonariensis* | * | Flaxleaf Fleabane | | | 3 | |
| Plantae | Flora | Asteraceae | CONY | *Conyza spp.* | * | | | | 1 | |
| Plantae | Flora | Asteraceae | 10442 | *Conyza sumatrensis* | * | Tall fleabane | | | 1 | |
| Plantae | Flora | Asteraceae | 1412 | *Cotula australis* | | Common Cotula | | | 1 | |
| Plantae | Flora | Asteraceae | 13698 | *Cyanthillium cinereum* | | little ironweed | | | 4 | |
| Plantae | Flora | Asteraceae | 15365 | *Cyanthillium cinereum var. cinereum* | * | | | | 1 | |
| Plantae | Flora | Asteraceae | 1426 | *Cymbonotus lawsonianus* | | Bear's Ear | | | 1 | |
| Plantae | Flora | Asteraceae | 14807 | *Enydra woollsii* | | | | | 3 | |
| Plantae | Flora | Asteraceae | 7425 | *Epaltes australis* | | Spreading Nut-heads | | | 1 | |
| Plantae | Flora | Asteraceae | 1439 | *Erechtites valerianifolia* | * | Brazilian Fireweed | | | 2 | |
| Plantae | Flora | Asteraceae | 9904 | *Euchiton involucratus* | | Star Cudweed | | | 1 | |
| Plantae | Flora | Asteraceae | 11439 | *Euchiton japonicus* | | | | | 4 | |
| Plantae | Flora | Asteraceae | 1449 | *Facelis retusa* | * | | | | 1 | |
| Plantae | Flora | Asteraceae | 14493 | *Gamochaeta coarctata* | * | | | | 1 | |
| Plantae | Flora | Asteraceae | 12748 | *Gamochaeta purpurea* | * | Purple Cudweed | | | 1 | |
| Plantae | Flora | Asteraceae | 8788 | *Hypochaeris radicata* | * | Catsear | | | 11 | |
| Plantae | Flora | Asteraceae | 9203 | *Leptinella longipes* | | | | | 1 | |
| Plantae | Flora | Asteraceae | 1605 | *Olearia nernstii* | | | | | 4 | |
| Plantae | Flora | Asteraceae | 8884 | *Onopordum acanthium subsp. acanthium* | * | Scotch Thistle | | | 1 | |

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|---|---|---|---|---|---|---|---|---|
| Plantae | Flora | Asteraceae | 8557 | *Ozothamnus diosmifolius* | | White Dogwood | | 15 |
| Plantae | Flora | Asteraceae | 1651 | *Senecio amygdalifolius* | | | | 4 |
| Plantae | Flora | Asteraceae | 6465 | *Senecio madagascariensis* | * | Fireweed | | 17 |
| Plantae | Flora | Asteraceae | SENE | *Senecio spp.* | | Groundsel, Fireweed | | 1 |
| Plantae | Flora | Asteraceae | 8789 | *Sigesbeckia orientalis subsp. orientalis* | | Indian Weed | | 1 |
| Plantae | Flora | Asteraceae | 1690 | *Sonchus oleraceus* | * | Common Sowthistle | | 6 |
| Plantae | Flora | Asteraceae | 1695 | *Tagetes minuta* | * | Stinking Roger | | 1 |
| Plantae | Flora | Asteraceae | 1698 | *Taraxacum officinale* | * | Dandelion | | 10 |
| Plantae | Flora | Asteraceae | 7130 | *Xanthium occidentale* | * | Noogoora Burr | | 1 |
| Plantae | Flora | Asteraceae | 11377 | *Xerochrysum bracteatum* | | Golden Everlasting | | 1 |
| Plantae | Flora | Azollaceae | AZOL | *Azolla spp.* | | | | 1 |
| Plantae | Flora | Basellaceae | 1733 | *Anredera cordifolia* | * | Madeira Vine | | 1 |
| Plantae | Flora | Bignoniaceae | 8688 | *Jacaranda mimosifolia* | * | Jacaranda | | 3 |
| Plantae | Flora | Bignoniaceae | 1740 | *Pandorea pandorana* | | Wonga Wonga Vine | | 11 |
| Plantae | Flora | Blechnaceae | 8052 | *Blechnum cartilagineum* | | Gristle Fern | | 18 |
| Plantae | Flora | Blechnaceae | 14900 | *Blechnum neohollandicum* | | | | 13 |
| Plantae | Flora | Blechnaceae | 8058 | *Blechnum nudum* | | Fishbone Water Fern | | 1 |
| Plantae | Flora | Blechnaceae | DOOD | *Doodia spp.* | | | | 1 |
| Plantae | Flora | Blechnaceae | 14930 | *Telmatoblechnum indicum* | | Swamp Water Fern | | 25 |
| Plantae | Flora | Callitrichaceae | 1909 | *Callitriche stagnalis* | * | Common Starwort | | 1 |
| Plantae | Flora | Campanulaceae | 10465 | *Lobelia anceps* | | | | 1 |
| Plantae | Flora | Campanulaceae | 1917 | *Lobelia gibbosa* | | Tall Lobelia | | 1 |
| Plantae | Flora | Campanulaceae | 14415 | *Lobelia purpurascens* | | whiteroot | | 16 |
| Plantae | Flora | Campanulaceae | 1919 | *Lobelia trigonocaulis* | | Forest Lobelia | | 1 |
| Plantae | Flora | Campanulaceae | WAHL | *Wahlenbergia spp.* | | Bluebell | | 1 |
| Plantae | Flora | Cannabaceae | 1939 | *Cannabis sativa* | * | Indian Hemp | | 1 |
| Plantae | Flora | Cannaceae | 1941 | *Canna indica* | * | Tous-les-mois Arrowroot | | 1 |
| Plantae | Flora | Caryophyllaceae | 2006 | *Stellaria media* | * | Common Chickweed | | 2 |
| Plantae | Flora | Casuarinaceae | 2012 | *Allocasuarina littoralis* | | Black She-Oak | | 17 |
| Plantae | Flora | Casuarinaceae | 2017 | *Allocasuarina torulosa* | | Forest Oak | | 30 |
| Plantae | Flora | Casuarinaceae | 9247 | *Casuarina equisetifolia subsp. incana* | | Coastal She-oak | | 1 |
| Plantae | Flora | Casuarinaceae | 2022 | *Casuarina glauca* | | Swamp Oak | | 44 |
| Plantae | Flora | Celastraceae | 14671 | *Denhamia bilocularis* | | | | 1 |
| Plantae | Flora | Celastraceae | 8387 | *Denhamia celastroides* | | Denhamia | | 1 |
| Plantae | Flora | Chenopodiaceae | 2110 | *Einadia hastata* | | Berry Saltbush | | 1 |
| Plantae | Flora | Clusiaceae | 7240 | *Hypericum gramineum* | | Small St John's Wort | | 1 |
| Plantae | Flora | Colchicaceae | 3548 | *Gloriosa superba* | * | Glory Lily | | 2 |
| Plantae | Flora | Commelinaceae | 2209 | *Commelina cyanea* | | Native Wandering Jew | | 9 |
| Plantae | Flora | Commelinaceae | 10508 | *Tradescantia fluminensis* | * | Wandering Jew | | 2 |
| Plantae | Flora | Convolvulaceae | 2215 | *Calystegia marginata* | | | | 1 |
| Plantae | Flora | Convolvulaceae | 2220 | *Convolvulus erubescens* | | Pink Bindweed | | 4 |
| Plantae | Flora | Convolvulaceae | 2222 | *Dichondra repens* | | Kidney Weed | | 11 |
| Plantae | Flora | Convolvulaceae | 2225 | *Ipomoea cairica* | * | | | 4 |
| Plantae | Flora | Convolvulaceae | 2227 | *Ipomoea indica* | * | Morning Glory | | 4 |
| Plantae | Flora | Convolvulaceae | 2231 | *Polymeria calycina* | | | | 3 |
| Plantae | Flora | Cunoniaceae | 13805 | *Ackama paniculosa* | | | | 2 |
| Plantae | Flora | Cunoniaceae | 2270 | *Callicoma serratifolia* | | Black Wattle | | 14 |
| Plantae | Flora | Cunoniaceae | 2275 | *Schizomeria ovata* | | Crabapple | | 3 |
| Plantae | Flora | Cyatheaceae | 8074 | *Cyathea australis* | | Rough Treefern | P | 3 |
| Plantae | Flora | Cyatheaceae | 8076 | *Cyathea cooperi* | | Straw Treefern | P | 1 |
| Plantae | Flora | Cyatheaceae | 8079 | *Cyathea leichhardtiana* | | Prickly Treefern | P | 1 |

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|---|---|---|---|---|---|---|---|---|
| Plantae | Flora | Cyatheaceae | CYAT | *Cyathea spp.* | | | P | 1 |
| Plantae | Flora | Cyperaceae | 2305 | *Bolboschoenus caldwellii* | | | | 1 |
| Plantae | Flora | Cyperaceae | 2310 | *Carex appressa* | | Tall Sedge | | 21 |
| Plantae | Flora | Cyperaceae | 2321 | *Carex fascicularis* | | Tassel Sedge | | 5 |
| Plantae | Flora | Cyperaceae | 2331 | *Carex longebrachiata* | | | | 2 |
| Plantae | Flora | Cyperaceae | 8855 | *Carex maculata* | | | | 5 |
| Plantae | Flora | Cyperaceae | CARE | *Carex spp.* | | | | 6 |
| Plantae | Flora | Cyperaceae | 2346 | *Cladium procerum* | | | | 1 |
| Plantae | Flora | Cyperaceae | CYPRC | *Cyperaceae indeterminate* | * | Sedges | | 2 |
| Plantae | Flora | Cyperaceae | 2358 | *Cyperus congestus* | * | | | 1 |
| Plantae | Flora | Cyperaceae | 7143 | *Cyperus difformis* | | Dirty Dora | | 1 |
| Plantae | Flora | Cyperaceae | 2364 | *Cyperus eragrostis* | * | Umbrella Sedge | | 8 |
| Plantae | Flora | Cyperaceae | 2365 | *Cyperus esculentus* | * | Yellow Nutgrass | | 1 |
| Plantae | Flora | Cyperaceae | 2366 | *Cyperus exaltatus* | | | | 4 |
| Plantae | Flora | Cyperaceae | 2367 | *Cyperus filipes* | | | | 1 |
| Plantae | Flora | Cyperaceae | 2379 | *Cyperus laevigatus* | | | | 1 |
| Plantae | Flora | Cyperaceae | 2385 | *Cyperus odoratus* | | | | 1 |
| Plantae | Flora | Cyperaceae | 8483 | *Cyperus polystachyos* | | | | 3 |
| Plantae | Flora | Cyperaceae | CYPE | *Cyperus spp.* | | | | 6 |
| Plantae | Flora | Cyperaceae | 2403 | *Cyperus tetraphyllus* | | | | 3 |
| Plantae | Flora | Cyperaceae | 7133 | *Eleocharis dulcis* | | | | 1 |
| Plantae | Flora | Cyperaceae | 2413 | *Eleocharis equisetina* | | | | 15 |
| Plantae | Flora | Cyperaceae | 2420 | *Eleocharis philippinensis* | | | | 1 |
| Plantae | Flora | Cyperaceae | 6988 | *Eleocharis sphacelata* | | Tall Spike Rush | | 2 |
| Plantae | Flora | Cyperaceae | 7435 | *Fimbristylis dichotoma* | | Common Fringe-sedge | | 1 |
| Plantae | Flora | Cyperaceae | 2431 | *Gahnia aspera* | | Rough Saw-sedge | | 18 |
| Plantae | Flora | Cyperaceae | 2432 | *Gahnia clarkei* | | Tall Saw-sedge | | 29 |
| Plantae | Flora | Cyperaceae | 2439 | *Gahnia melanocarpa* | | Black Fruit Saw-sedge | | 1 |
| Plantae | Flora | Cyperaceae | 2441 | *Gahnia radula* | | | | 1 |
| Plantae | Flora | Cyperaceae | 2442 | *Gahnia sieberiana* | | Red-fruit Saw-sedge | P | 10 |
| Plantae | Flora | Cyperaceae | GAHN | *Gahnia spp.* | | | | 2 |
| Plantae | Flora | Cyperaceae | 2448 | *Isolepis cernua* | | Nodding Club-rush | | 1 |
| Plantae | Flora | Cyperaceae | 2454 | *Isolepis inundata* | | Club-rush | | 1 |
| Plantae | Flora | Cyperaceae | ISOL | *Isolepis spp.* | | Club-rush | | 3 |
| Plantae | Flora | Cyperaceae | 6402 | *Lepidosperma laterale* | | Variable Sword-sedge | | 12 |
| Plantae | Flora | Cyperaceae | LEPD | *Lepidosperma spp.* | | | | 2 |
| Plantae | Flora | Cyperaceae | 2476 | *Lepironia articulata* | | | | 1 |
| Plantae | Flora | Cyperaceae | 15320 | *Machaerina articulata* | | Jointed Twig-rush | | 12 |
| Plantae | Flora | Cyperaceae | 15323 | *Machaerina juncea* | | Bare Twig-rush | | 7 |
| Plantae | Flora | Cyperaceae | 15327 | *Machaerina rubiginosa* | | | | 7 |
| Plantae | Flora | Cyperaceae | 8956 | *Ptilothrix deusta* | | | | 1 |
| Plantae | Flora | Cyperaceae | 6707 | *Schoenoplectus mucronatus* | | | | 2 |
| Plantae | Flora | Cyperaceae | 2490 | *Schoenoplectus validus* | | | | 1 |
| Plantae | Flora | Cyperaceae | 2491 | *Schoenus apogon* | | Fluke Bogrush | | 1 |
| Plantae | Flora | Cyperaceae | 2504 | *Schoenus paludosus* | | | | 1 |
| Plantae | Flora | Cyperaceae | SCIR | *Scirpus spp.* | | Club-rush | | 1 |
| Plantae | Flora | Davalliaceae | 10647 | *Davallia solida var. pyxidata* | | Hare's Foot Fern | | 2 |
| Plantae | Flora | Davalliaceae | 8088 | *Nephrolepis cordifolia* | | Fishbone Fern | | 1 |
| Plantae | Flora | Dennstaedtiaceae | 7271 | *Histiopteris incisa* | | Bat's Wing Fern | | 3 |
| Plantae | Flora | Dennstaedtiaceae | 7749 | *Hypolepis muelleri* | | Harsh Ground Fern | | 12 |
| Plantae | Flora | Dennstaedtiaceae | HYPL | *Hypolepis spp.* | | | | 1 |
| Plantae | Flora | Dennstaedtiaceae | 6403 | *Pteridium esculentum* | | Bracken | | 35 |
| Plantae | Flora | Dicksoniaceae | 8341 | *Calochlaena dubia* | | Rainbow Fern | | 23 |
| Plantae | Flora | Dicksoniaceae | 8082 | *Dicksonia antarctica* | | Soft Treefern | P | 2 |
| Plantae | Flora | Dilleniaceae | 2527 | *Hibbertia aspera* | | Rough Guinea Flower | | 9 |
| Plantae | Flora | Dilleniaceae | 2533 | *Hibbertia diffusa* | | Wedge Guinea Flower | | 1 |
| Plantae | Flora | Dilleniaceae | 2542 | *Hibbertia obtusifolia* | | Hoary Guinea Flower | | 4 |
| Plantae | Flora | Dilleniaceae | 2545 | *Hibbertia riparia* | | | | 2 |
| Plantae | Flora | Dilleniaceae | 2548 | *Hibbertia scandens* | | Climbing Guinea Flower | | 24 |
| Plantae | Flora | Dilleniaceae | 2551 | *Hibbertia vestita* | | | | 3 |
| Plantae | Flora | Dioscoreaceae | 6446 | *Dioscorea transversa* | | Native Yam | | 13 |
| Plantae | Flora | Droseraceae | 2561 | *Drosera spatulata* | | | | 3 |
| Plantae | Flora | Dryopteridaceae | 8015 | *Lastreopsis decomposita* | | Trim Shield Fern | | 2 |

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|---|---|---|---|---|---|---|---|
| Plantae | Flora | Dryopteridaceae | LAST | *Lastreopsis spp.* | | | 6 |
| Plantae | Flora | Ebenaceae | 2562 | *Diospyros australis* | | Black Plum | 1 |
| Plantae | Flora | Ebenaceae | 2566 | *Diospyros pentamera* | | Myrtle Ebony | 3 |
| Plantae | Flora | Elaeocarpaceae | 2572 | *Elaeocarpus kirtonii* | | Silver Quandong | 2 |
| Plantae | Flora | Elaeocarpaceae | 2573 | *Elaeocarpus obovatus* | | Hard Quandong | 8 |
| Plantae | Flora | Elaeocarpaceae | 2574 | *Elaeocarpus reticulatus* | | Blueberry Ash | 14 |
| Plantae | Flora | Elaeocarpaceae | 2576 | *Sloanea australis* | | Maiden's Blush | 1 |
| Plantae | Flora | Elaeocarpaceae | 6214 | *Tetratheca thymifolia* | | Black-eyed Susan | 6 |
| Plantae | Flora | Ericaceae | 2605 | *Epacris pulchella* | | Wallum Heath | 1 |
| Plantae | Flora | Ericaceae | 2623 | *Leucopogon juniperinus* | | Prickly Beard-heath | 1 |
| Plantae | Flora | Ericaceae | 2624 | *Leucopogon lanceolatus* | | | 2 |
| Plantae | Flora | Ericaceae | 6845 | *Leucopogon lanceolatus var. gracilis* | | | 3 |
| Plantae | Flora | Ericaceae | 6425 | *Leucopogon lanceolatus var. lanceolatus* | | | 1 |
| Plantae | Flora | Ericaceae | 2632 | *Leucopogon parviflorus* | | Coastal Beard-heath | 1 |
| Plantae | Flora | Ericaceae | 2663 | *Trochocarpa laurina* | | Tree Heath | 3 |
| Plantae | Flora | Euphorbiaceae | 8669 | *Alchornea ilicifolia* | | Native Holly | 1 |
| Plantae | Flora | Euphorbiaceae | 8400 | *Baloghia inophylla* | | Brush Bloodwood | 1 |
| Plantae | Flora | Euphorbiaceae | 2698 | *Claoxylon australe* | | Brittlewood | 1 |
| Plantae | Flora | Euphorbiaceae | 2706 | *Croton verreauxii* | | Green Native Cascarilla | 4 |
| Plantae | Flora | Euphorbiaceae | 7288 | *Excoecaria agallocha* | | Milky Mangrove | 1 |
| Plantae | Flora | Euphorbiaceae | 2735 | *Mallotus philippensis* | | Red Kamala | 1 |
| Plantae | Flora | Euphorbiaceae | 2766 | *Vernicia fordii* | | Tung Oil Tree | 1 |
| Plantae | Flora | Eupomatiaceae | 2768 | *Eupomatia laurina* | | Bolwarra | 8 |
| Plantae | Flora | Fabaceae (Caesalpinioideae) | 1878 | *Caesalpinia decapetala* | * | Thorny Poinciana | 1 |
| Plantae | Flora | Fabaceae (Caesalpinioideae) | 7419 | *Delonix regia* | * | Royal Poinciana | 2 |
| Plantae | Flora | Fabaceae (Caesalpinioideae) | 7377 | *Senna pendula var. glabrata* | * | | 11 |
| Plantae | Flora | Fabaceae (Caesalpinioideae) | 10505 | *Senna septemtrionalis* | * | Arsenic Bush | 4 |
| Plantae | Flora | Fabaceae (Faboideae) | 2787 | *Bossiaea rhombifolia* | | | 4 |
| Plantae | Flora | Fabaceae (Faboideae) | 2796 | *Castanospermum australe* | | Black Bean | 1 |
| Plantae | Flora | Fabaceae (Faboideae) | 2822 | *Daviesia genistifolia* | | Broom Bitter Pea | 2 |
| Plantae | Flora | Fabaceae (Faboideae) | 2827 | *Daviesia ulicifolia* | | Gorse Bitter Pea | 2 |
| Plantae | Flora | Fabaceae (Faboideae) | 8824 | *Desmodium uncinatum* | * | Silver-leaved Desmodium | 1 |
| Plantae | Flora | Fabaceae (Faboideae) | 2850 | *Dillwynia retorta* | | | 1 |
| Plantae | Flora | Fabaceae (Faboideae) | 9357 | *Erythrina crista-galli* | * | Cockspur Coral Tree | 1 |
| Plantae | Flora | Fabaceae (Faboideae) | 2860 | *Glycine clandestina* | | Twining glycine | 11 |
| Plantae | Flora | Fabaceae (Faboideae) | 7208 | *Glycine microphylla* | | Small-leaf Glycine | 4 |
| Plantae | Flora | Fabaceae (Faboideae) | GLYC | *Glycine spp.* | | | 1 |
| Plantae | Flora | Fabaceae (Faboideae) | 2861 | *Glycine tabacina* | | Variable Glycine | 2 |
| Plantae | Flora | Fabaceae (Faboideae) | 7844 | *Glycine tomentella* | | Woolly Glycine | 1 |
| Plantae | Flora | Fabaceae (Faboideae) | 15314 | *Grona varians* | | | 4 |
| Plantae | Flora | Fabaceae (Faboideae) | 2873 | *Hardenbergia violacea* | | False Sarsaparilla | 13 |

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|---|---|---|---|---|---|---|---|
| Plantae | Flora | Fabaceae (Faboideae) | 2874 | *Hovea acutifolia* | | | 1 |
| Plantae | Flora | Fabaceae (Faboideae) | 2876 | *Hovea linearis* | | | 1 |
| Plantae | Flora | Fabaceae (Faboideae) | 2882 | *Indigofera australis* | | Australian Indigo | 2 |
| Plantae | Flora | Fabaceae (Faboideae) | 2892 | *Jacksonia scoparia* | | Dogwood | 9 |
| Plantae | Flora | Fabaceae (Faboideae) | 2898 | *Kennedia rubicunda* | | Dusky Coral Pea | 9 |
| Plantae | Flora | Fabaceae (Faboideae) | 7349 | *Lespedeza striata* | * | Japanese Clover | 1 |
| Plantae | Flora | Fabaceae (Faboideae) | 15369 | *Maekawaea rhytidophylla* | | | 10 |
| Plantae | Flora | Fabaceae (Faboideae) | 2972 | *Pueraria lobata* | * | Kudzu | 2 |
| Plantae | Flora | Fabaceae (Faboideae) | 15315 | *Pullenia gunnii* | | | 5 |
| Plantae | Flora | Fabaceae (Faboideae) | 2985 | *Pultenaea daphnoides* | | Large-leaf Bush-pea | 1 |
| Plantae | Flora | Fabaceae (Faboideae) | 3014 | *Pultenaea retusa* | | | 5 |
| Plantae | Flora | Fabaceae (Faboideae) | 3023 | *Pultenaea villosa* | | Hairy Bush-pea | 2 |
| Plantae | Flora | Fabaceae (Faboideae) | 13058 | *Tetragonolobus purpureus* | * | | 1 |
| Plantae | Flora | Fabaceae (Faboideae) | 3085 | *Trifolium repens* | * | White Clover | 7 |
| Plantae | Flora | Fabaceae (Faboideae) | TRIF | *Trifolium spp.* | * | | 2 |
| Plantae | Flora | Fabaceae (Faboideae) | 11703 | *Vicia sativa subsp. nigra* | * | Narrow-leaved Vetch | 1 |
| Plantae | Flora | Fabaceae (Faboideae) | 11189 | *Vigna vexillata var. youngiana* | | | 1 |
| Plantae | Flora | Fabaceae (Mimosoideae) | 3716 | *Acacia binervata* | | Two-veined Hickory | 10 |
| Plantae | Flora | Fabaceae (Mimosoideae) | 3745 | *Acacia concurrens* | | Curracabah | 2 |
| Plantae | Flora | Fabaceae (Mimosoideae) | 3771 | *Acacia falcata* | | | 1 |
| Plantae | Flora | Fabaceae (Mimosoideae) | 3774 | *Acacia fimbriata* | | Fringed Wattle | 6 |
| Plantae | Flora | Fabaceae (Mimosoideae) | 3777 | *Acacia floribunda* | | White Sally | 12 |
| Plantae | Flora | Fabaceae (Mimosoideae) | 3792 | *Acacia implexa* | | Hickory Wattle | 6 |
| Plantae | Flora | Fabaceae (Mimosoideae) | 3794 | *Acacia irrorata* | | Green Wattle | 20 |
| Plantae | Flora | Fabaceae (Mimosoideae) | 6472 | *Acacia irrorata subsp. irrorata* | | Green Wattle | 2 |
| Plantae | Flora | Fabaceae (Mimosoideae) | 7109 | *Acacia irrorata subsp. velutinella* | | Green Wattle | 2 |
| Plantae | Flora | Fabaceae (Mimosoideae) | 3816 | *Acacia longifolia* | | | 4 |
| Plantae | Flora | Fabaceae (Mimosoideae) | 10790 | *Acacia longifolia subsp. longifolia* | | Sydney Golden Wattle | 5 |
| Plantae | Flora | Fabaceae (Mimosoideae) | 10791 | *Acacia longifolia subsp. sophorae* | | Coastal Wattle | 1 |
| Plantae | Flora | Fabaceae (Mimosoideae) | 3817 | *Acacia longissima* | | Long-leaf Wattle | 1 |
| Plantae | Flora | Fabaceae (Mimosoideae) | 3821 | *Acacia maidenii* | | Maiden's Wattle | 12 |
| Plantae | Flora | Fabaceae (Mimosoideae) | 3834 | *Acacia myrtifolia* | | Red-stemmed Wattle | 3 |
| Plantae | Flora | Fabaceae (Mimosoideae) | 3853 | *Acacia podalyriifolia* | | Queensland Silver Wattle | 1 |
| Plantae | Flora | Fabaceae (Mimosoideae) | 3881 | *Acacia suaveolens* | | Sweet Wattle | 2 |
| Plantae | Flora | Fabaceae (Mimosoideae) | 3893 | *Acacia ulicifolia* | | Prickly Moses | 4 |
| Plantae | Flora | Fabaceae (Mimosoideae) | 7894 | *Archidendron grandiflorum* | | Pink Lace Flower | 1 |
| Plantae | Flora | Flacourtiaceae | 3110 | *Scolopia braunii* | | Flintwood | 3 |
| Plantae | Flora | Flagellariaceae | 7106 | *Flagellaria indica* | | Whip Vine | 4 |

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|---|---|---|---|---|---|---|---|---|---|
| Plantae | Flora | Fumariaceae | 9367 | *Fumaria muralis subsp. muralis* | * | Wall Fumitory | | 1 | |
| Plantae | Flora | Gentianaceae | 13834 | *Schenkia spicata* | | Spike Centaury | | 2 | |
| Plantae | Flora | Geraniaceae | 3148 | *Geranium homeanum* | | | | 1 | |
| Plantae | Flora | Geraniaceae | 3156 | *Geranium solanderi* | | Native Geranium | | 1 | |
| Plantae | Flora | Goodeniaceae | 3174 | *Dampiera stricta* | | | | 2 | |
| Plantae | Flora | Goodeniaceae | 6658 | *Dampiera sylvestris* | | | | 5 | |
| Plantae | Flora | Goodeniaceae | 9078 | *Goodenia bellidifolia subsp. argentea* | | | | 1 | |
| Plantae | Flora | Goodeniaceae | 3188 | *Goodenia hederacea* | | Ivy Goodenia | | 3 | |
| Plantae | Flora | Goodeniaceae | 9279 | *Goodenia hederacea subsp. hederacea* | | | | 2 | |
| Plantae | Flora | Goodeniaceae | 3192 | *Goodenia ovata* | | Hop Goodenia | | 1 | |
| Plantae | Flora | Goodeniaceae | 3196 | *Goodenia rotundifolia* | | | | 1 | |
| Plantae | Flora | Grammitidaceae | 10518 | *Grammitis billardierei* | | Finger Fern | | 1 | |
| Plantae | Flora | Haloragaceae | 8648 | *Gonocarpus micranthus subsp. ramosissimus* | | | | 2 | |
| Plantae | Flora | Haloragaceae | 3247 | *Gonocarpus tetragynus* | | Poverty Raspwort | | 1 | |
| Plantae | Flora | Haloragaceae | 3248 | *Gonocarpus teucrioides* | | Germander Raspwort | | 3 | |
| Plantae | Flora | Hamamelidaceae | 11353 | *Liquidambar styraciflua* | * | Sweetgum | | 1 | |
| Plantae | Flora | Iridaceae | 10271 | *Crocosmia x crocosmiiflora* | * | Montbretia | | 2 | |
| Plantae | Flora | Iridaceae | 3301 | *Patersonia glabrata* | | Leafy Purple-flag | | 1 | |
| Plantae | Flora | Iridaceae | 3303 | *Patersonia sericea* | | Silky Purple-Flag | | 1 | |
| Plantae | Flora | Iridaceae | 9237 | *Watsonia meriana* | * | | | 1 | |
| Plantae | Flora | Juncaceae | 3316 | *Juncus articulatus* | * | | | 1 | |
| Plantae | Flora | Juncaceae | 3326 | *Juncus continuus* | | | | 3 | |
| Plantae | Flora | Juncaceae | 7430 | *Juncus kraussii subsp. australiensis* | | Sea Rush | | 6 | |
| Plantae | Flora | Juncaceae | 8998 | *Juncus mollis* | | | | 1 | |
| Plantae | Flora | Juncaceae | 3341 | *Juncus polyanthemus* | | | | 4 | |
| Plantae | Flora | Juncaceae | 3342 | *Juncus prismatocarpus* | | | | 2 | |
| Plantae | Flora | Juncaceae | JUNC | *Juncus spp.* | | | | 3 | |
| Plantae | Flora | Juncaceae | 3350 | *Juncus usitatus* | | | | 14 | |
| Plantae | Flora | Juncaginaceae | 3363 | *Maundia triglochinoides* | | | V | 12 | |
| Plantae | Flora | Juncaginaceae | 3369 | *Triglochin striata* | | Streaked Arrowgrass | | 1 | |
| Plantae | Flora | Lamiaceae | 12201 | *Clerodendrum floribundum var. floribundum* | | | | 6 | |
| Plantae | Flora | Lamiaceae | 6484 | *Clerodendrum tomentosum* | | Hairy Clerodendrum | | 2 | |
| Plantae | Flora | Lamiaceae | 6247 | *Gmelina leichhardtii* | | White Beech | | 3 | |
| Plantae | Flora | Lamiaceae | 3397 | *Plectranthus parviflorus* | | | | 1 | |
| Plantae | Flora | Lamiaceae | PLEC | *Plectranthus spp.* | | | | 1 | |
| Plantae | Flora | Lamiaceae | 3450 | *Stachys arvensis* | * | Stagger Weed | | 1 | |
| Plantae | Flora | Lauraceae | 3467 | *Cassytha glabella* | | | | 4 | |
| Plantae | Flora | Lauraceae | 3469 | *Cassytha pubescens* | | Downy Dodder-laurel | | 2 | |
| Plantae | Flora | Lauraceae | CASY | *Cassytha spp.* | | | | 2 | |
| Plantae | Flora | Lauraceae | 3471 | *Cinnamomum camphora* | * | Camphor Laurel | | 23 | |
| Plantae | Flora | Lauraceae | 3479 | *Cryptocarya glaucescens* | | Jackwood | | 7 | |
| Plantae | Flora | Lauraceae | 3483 | *Cryptocarya microneura* | | Murrogun | | 1 | |
| Plantae | Flora | Lauraceae | 3485 | *Cryptocarya rigida* | | Forest Maple | | 4 | |
| Plantae | Flora | Lauraceae | 3489 | *Endiandra discolor* | | Rose Walnut | | 6 | |
| Plantae | Flora | Lauraceae | 3493 | *Endiandra muelleri* | | Green-leaved Rose Walnut | | 1 | |
| Plantae | Flora | Lauraceae | 3495 | *Endiandra sieberi* | | Hard Corkwood | | 5 | |
| Plantae | Flora | Lauraceae | 3496 | *Endiandra virens* | | White Apple | | 1 | |
| Plantae | Flora | Lauraceae | 8675 | *Litsea australis* | | Brown Bolly Gum | | 1 | |
| Plantae | Flora | Lauraceae | 8386 | *Neolitsea australiensis* | | Green Bolly Gum | | 1 | |
| Plantae | Flora | Lauraceae | 3499 | *Neolitsea dealbata* | | Hairy-leaved Bolly Gum | | 1 | |
| Plantae | Flora | Lentibulariaceae | 9234 | *Utricularia gibba* | | Floating Bladderwort | | 1 | |
| Plantae | Flora | Lentibulariaceae | UTRI | *Utricularia spp.* | | | | 1 | |
| Plantae | Flora | Liliaceae | 3559 | *Lilium formosanum* | * | Formosan Lily | | 2 | |
| Plantae | Flora | Lindsaeaceae | 6406 | *Lindsaea linearis* | | Screw Fern | | 2 | |
| Plantae | Flora | Lindsaeaceae | 6401 | *Lindsaea microphylla* | | Lacy Wedge Fern | | 1 | |
| Plantae | Flora | Loganiaceae | 3591 | *Mitrasacme alsinoides* | | | | 3 | |
| Plantae | Flora | Lomandraceae | 7709 | *Lomandra confertifolia subsp. pallida* | | Matrush | | 2 | |
| Plantae | Flora | Lomandraceae | 6302 | *Lomandra filiformis* | | Wattle Matt-rush | | 3 | |

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|---|---|---|---|---|---|---|---|---|
| Plantae | Flora | Lomandraceae | 7931 | *Lomandra filiformis subsp. filiformis* | | | | 1 |
| Plantae | Flora | Lomandraceae | 6304 | *Lomandra glauca* | | Pale Mat-rush | | 1 |
| Plantae | Flora | Lomandraceae | 8776 | *Lomandra hystrix* | | | | 3 |
| Plantae | Flora | Lomandraceae | 6308 | *Lomandra longifolia* | | Spiny-headed Mat-rush | | 35 |
| Plantae | Flora | Lomandraceae | 8802 | *Lomandra multiflora subsp. multiflora* | | Many-flowered Mat-rush | | 1 |
| Plantae | Flora | Lomandraceae | LOMA | *Lomandra spp.* | | Mat-rush | | 2 |
| Plantae | Flora | Loranthaceae | 6856 | *Amyema congener subsp. congener* | | | | 1 |
| Plantae | Flora | Loranthaceae | 3602 | *Amyema gaudichaudii* | | | | 1 |
| Plantae | Flora | Loranthaceae | AMYE | *Amyema spp.* | | Mistletoe | | 1 |
| Plantae | Flora | Loranthaceae | 3610 | *Amylotheca dictyophleba* | | | | 1 |
| Plantae | Flora | Loranthaceae | 3620 | *Muellerina eucalyptoides* | | | | 1 |
| Plantae | Flora | Loranthaceae | MUEL | *Muellerina spp.* | | | | 1 |
| Plantae | Flora | Luzuriagaceae | 6015 | *Eustrephus latifolius* | | Wombat Berry | | 11 |
| Plantae | Flora | Luzuriagaceae | 6016 | *Geitonoplesium cymosum* | | Scrambling Lily | | 16 |
| Plantae | Flora | Lycopodiaceae | LYCO | *Lycopodium spp.* | | | P | 1 |
| Plantae | Flora | Lythraceae | 11362 | *Lagerstroemia indica* | * | | | 1 |
| Plantae | Flora | Malvaceae | 3632 | *Abutilon oxycarpum* | | Straggly Lantern-bush | | 1 |
| Plantae | Flora | Malvaceae | 6126 | *Brachychiton acerifolius* | | Illawarra Flame Tree | | 1 |
| Plantae | Flora | Malvaceae | 8877 | *Hibiscus heterophyllus subsp. heterophyllus* | | Native Rosella | | 5 |
| Plantae | Flora | Malvaceae | 3645 | *Hibiscus splendens* | | Pink Hibiscus | | 1 |
| Plantae | Flora | Malvaceae | 3647 | *Hibiscus tiliaceus* | | Cottonwood Hibiscus | | 1 |
| Plantae | Flora | Malvaceae | 3657 | *Malva parviflora* | * | Small-flowered Mallow | | 1 |
| Plantae | Flora | Malvaceae | 6151 | *Seringia arborescens* | | | | 2 |
| Plantae | Flora | Malvaceae | 3673 | *Sida rhombifolia* | * | Paddy's Lucerne | | 13 |
| Plantae | Flora | Melastomataceae | 3675 | *Melastoma affine* | | Blue Tongue | | 6 |
| Plantae | Flora | Meliaceae | 3679 | *Dysoxylum rufum* | | Hairy Rosewood | | 1 |
| Plantae | Flora | Meliaceae | 3680 | *Melia azedarach* | | White Cedar | | 4 |
| Plantae | Flora | Meliaceae | 11178 | *Synoum glandulosum subsp. glandulosum* | | Scentless Rosewood | | 23 |
| Plantae | Flora | Menispermaceae | 3688 | *Sarcopetalum harveyanum* | | Pearl Vine | | 3 |
| Plantae | Flora | Menispermaceae | 3690 | *Stephania japonica* | | Snake vine | | 12 |
| Plantae | Flora | Menispermaceae | 8428 | *Stephania japonica var. discolor* | | Snake Vine | | 3 |
| Plantae | Flora | Menyanthaceae | 14804 | *Liparophyllum exaltatum* | | | | 5 |
| Plantae | Flora | Menyanthaceae | 7615 | *Nymphoides geminata* | | Entire Marshwort | | 1 |
| Plantae | Flora | Menyanthaceae | 7891 | *Nymphoides indica* | | Water Snowflake | | 2 |
| Plantae | Flora | Monimiaceae | 3918 | *Wilkiea huegeliana* | | Veiny Wilkiea | | 6 |
| Plantae | Flora | Moraceae | 7479 | *Ficus coronata* | | Creek Sandpaper Fig | | 17 |
| Plantae | Flora | Moraceae | 3921 | *Ficus fraseri* | | Sandpaper Fig | | 2 |
| Plantae | Flora | Moraceae | 3922 | *Ficus macrophylla* | | | | 6 |
| Plantae | Flora | Moraceae | 7301 | *Ficus obliqua* | | Small-leaved Fig | | 1 |
| Plantae | Flora | Moraceae | 3924 | *Ficus rubiginosa* | | Port Jackson Fig | | 4 |
| Plantae | Flora | Moraceae | FICU | *Ficus spp.* | | | | 1 |
| Plantae | Flora | Moraceae | 3927 | *Ficus watkinsiana* | | Strangling Fig | | 4 |
| Plantae | Flora | Moraceae | 3928 | *Maclura cochinchinensis* | | Cockspur Thorn | | 12 |
| Plantae | Flora | Moraceae | 3930 | *Morus alba* | * | White Mulberry | | 2 |
| Plantae | Flora | Moraceae | 3931 | *Streblus brunonianus* | | Whalebone Tree | | 1 |
| Plantae | Flora | Moraceae | 10416 | *Trophis scandens* | | Burny Vine | | 4 |
| Plantae | Flora | Myrtaceae | 3968 | *Acmena smithii* | | Lilly Pilly | | 16 |
| Plantae | Flora | Myrtaceae | 3970 | *Angophora costata* | | Sydney Red Gum | | 3 |
| Plantae | Flora | Myrtaceae | 3971 | *Angophora floribunda* | | Rough-barked Apple | | 1 |
| Plantae | Flora | Myrtaceae | 3976 | *Archirhodomyrtus beckleri* | | Rose Myrtle | | 16 |
| Plantae | Flora | Myrtaceae | 3984 | *Backhousia myrtifolia* | | Grey Myrtle | | 3 |
| Plantae | Flora | Myrtaceae | 3997 | *Baeckea linifolia* | | Weeping Baeckea | P | 2 |
| Plantae | Flora | Myrtaceae | 4015 | *Callistemon salignus* | | Willow Bottlebrush | | 44 |
| Plantae | Flora | Myrtaceae | 4019 | *Callistemon viminalis* | | Weeping Bottlebrush | | 3 |
| Plantae | Flora | Myrtaceae | 11748 | *Corymbia citriodora* | * | Lemon-scented Gum | | 1 |
| Plantae | Flora | Myrtaceae | 9687 | *Corymbia gummifera* | | Red Bloodwood | | 12 |
| Plantae | Flora | Myrtaceae | 9601 | *Corymbia intermedia* | | Pink Bloodwood | | 39 |

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|---|---|---|---|---|---|---|---|---|---|---|
| Plantae | Flora | Myrtaceae | 12526 | *Corymbia torelliana* | * | Cadaghi | | | 1 | |
| Plantae | Flora | Myrtaceae | 7027 | *Eucalyptus acmenoides* | | White Mahogany | | | 10 | |
| Plantae | Flora | Myrtaceae | 8617 | *Eucalyptus ancophila* | | | | | 3 | |
| Plantae | Flora | Myrtaceae | 7585 | *Eucalyptus biturbinata* | | Grey Gum | | | 1 | |
| Plantae | Flora | Myrtaceae | 4060 | *Eucalyptus botryoides* | | Bangalay | | | 1 | |
| Plantae | Flora | Myrtaceae | 8599 | *Eucalyptus carnea* | | Thick-leaved Mahogany | | | 7 | |
| Plantae | Flora | Myrtaceae | 4074 | *Eucalyptus crebra* | | Narrow-leaved Ironbark | | | 2 | |
| Plantae | Flora | Myrtaceae | 4087 | *Eucalyptus eugenioides* | | Thin-leaved Stringybark | | | 1 | |
| Plantae | Flora | Myrtaceae | 4097 | *Eucalyptus globoidea* | | White Stringybark | | | 1 | |
| Plantae | Flora | Myrtaceae | 4101 | *Eucalyptus grandis* | | Flooded Gum | | | 13 | |
| Plantae | Flora | Myrtaceae | 4128 | *Eucalyptus microcorys* | | Tallowwood | | | 39 | |
| Plantae | Flora | Myrtaceae | 4149 | *Eucalyptus paniculata* | | Grey Ironbark | | | 1 | |
| Plantae | Flora | Myrtaceae | 4155 | *Eucalyptus pilularis* | | Blackbutt | | | 33 | |
| Plantae | Flora | Myrtaceae | 4157 | *Eucalyptus planchoniana* | | Bastard Tallowwood | | | 4 | |
| Plantae | Flora | Myrtaceae | 4162 | *Eucalyptus propinqua* | | Small-fruited Grey Gum | | | 21 | |
| Plantae | Flora | Myrtaceae | 4168 | *Eucalyptus racemosa* | | Narrow-leaved Scribbly Gum | | | 1 | |
| Plantae | Flora | Myrtaceae | 4170 | *Eucalyptus resinifera* | | Red Mahogany | | | 6 | |
| Plantae | Flora | Myrtaceae | 8694 | *Eucalyptus resinifera subsp. hemilampra* | | | | | 4 | |
| Plantae | Flora | Myrtaceae | 4171 | *Eucalyptus robusta* | | Swamp Mahogany | | | 32 | |
| Plantae | Flora | Myrtaceae | 4177 | *Eucalyptus saligna* | | Sydney Blue Gum | | | 4 | |
| Plantae | Flora | Myrtaceae | 4180 | *Eucalyptus siderophloia* | | Grey Ironbark | | | 17 | |
| Plantae | Flora | Myrtaceae | 4183 | *Eucalyptus signata* | | Scribbly Gum | | | 18 | |
| Plantae | Flora | Myrtaceae | EUCA | *Eucalyptus spp.* | | | | | 1 | |
| Plantae | Flora | Myrtaceae | 4191 | *Eucalyptus tereticornis* | | Forest Red Gum | | | 8 | |
| Plantae | Flora | Myrtaceae | 13289 | *Harmogia densifolia* | | | | | 1 | |
| Plantae | Flora | Myrtaceae | 4222 | *Leptospermum laevigatum* | | Coast Teatree | | | 7 | |
| Plantae | Flora | Myrtaceae | 4224 | *Leptospermum liversidgei* | | Olive Tea-tree | | | 2 | |
| Plantae | Flora | Myrtaceae | 4234 | *Leptospermum petersonii* | | Lemon-scented Teatree | | | 2 | |
| Plantae | Flora | Myrtaceae | 7245 | *Leptospermum polygalifolium* | | Tantoon | | | 5 | |
| Plantae | Flora | Myrtaceae | LEPT | *Leptospermum spp.* | | Tea-tree | | | 6 | |
| Plantae | Flora | Myrtaceae | 4242 | *Lophostemon confertus* | | Brush Box | | | 20 | |
| Plantae | Flora | Myrtaceae | 4243 | *Lophostemon suaveolens* | | Swamp Mahogany, Swamp Turpentine | | | 25 | |
| Plantae | Flora | Myrtaceae | 4252 | *Melaleuca groveana* | | Grove's Paperbark | V | | 1 | |
| Plantae | Flora | Myrtaceae | 4257 | *Melaleuca linariifolia* | | Flax-leaved Paperbark | | | 19 | |
| Plantae | Flora | Myrtaceae | 4260 | *Melaleuca quinquenervia* | | Broad-leaved Paperbark | | | 44 | |
| Plantae | Flora | Myrtaceae | 4261 | *Melaleuca sieberi* | | | | | 2 | |
| Plantae | Flora | Myrtaceae | 4264 | *Melaleuca styphelioides* | | Prickly-leaved Tea Tree | | | 29 | |
| Plantae | Flora | Myrtaceae | 4277 | *Pilidiostigma glabrum* | | | | | 2 | |
| Plantae | Flora | Myrtaceae | 4283 | *Rhodamnia rubescens* | | Scrub Turpentine | E4A | CE | 36 | |
| Plantae | Flora | Myrtaceae | 4284 | *Rhodomyrtus psidioides* | | Native Guava | E4A | CE | 18 | |
| Plantae | Flora | Myrtaceae | 13905 | *Sannantha angusta* | | | | | 3 | |
| Plantae | Flora | Myrtaceae | 13751 | *Sannantha pluriflora* | | | | | 1 | |
| Plantae | Flora | Myrtaceae | 6688 | *Syncarpia glomulifera* | | Turpentine | | | 43 | |
| Plantae | Flora | Myrtaceae | 6778 | *Syzygium australe* | | Brush Cherry | | | 4 | |
| Plantae | Flora | Myrtaceae | 4291 | *Syzygium luehmannii* | | Small-leaved Lilly Pilly | | | 4 | |
| Plantae | Flora | Myrtaceae | 7201 | *Syzygium oleosum* | | Blue Lilly Pilly | | | 3 | |
| Plantae | Flora | Myrtaceae | 4297 | *Tristaniopsis laurina* | | Kanooka | | | 3 | |
| Plantae | Flora | Myrtaceae | 6799 | *Waterhousea floribunda* | | Weeping Lilly Pilly | | | 2 | |
| Plantae | Flora | Nymphaeaceae | 10779 | *Nymphaea caerulea subsp. zanzibarensis* | * | Cape Waterlily | | | 2 | |
| Plantae | Flora | Nymphaeaceae | 7460 | *Nymphaea gigantea* | | Giant Waterlily | | | 2 | |
| Plantae | Flora | Nymphaeaceae | NYMP | *Nymphaea spp.* | | | | | 5 | |
| Plantae | Flora | Ochnaceae | 4306 | *Ochna serrulata* | * | Mickey Mouse Plant | | | 3 | |
| Plantae | Flora | Ochnaceae | OCHN | *Ochna spp.* | * | | | | 1 | |
| Plantae | Flora | Oleaceae | 4313 | *Ligustrum sinense* | * | Small-leaved Privet | | | 5 | |
| Plantae | Flora | Oleaceae | LIGU | *Ligustrum spp.* | * | | | | 1 | |
| Plantae | Flora | Oleaceae | 4318 | *Notelaea longifolia* | | Large Mock-olive | | | 16 | |
| Plantae | Flora | Oleaceae | 4322 | *Notelaea venosa* | | Veined Mock-olive | | | 1 | |
| Plantae | Flora | Onagraceae | 7297 | *Ludwigia octovalvis* | | Willow Primrose | | | 2 | |
| Plantae | Flora | Onagraceae | 7375 | *Ludwigia peploides subsp. montevidensis* | | Water Primrose | | | 7 | |
| Plantae | Flora | Orchidaceae | 4388 | *Calanthe triplicata* | | Christmas Orchid | P | | 1 | |
| Plantae | Flora | Orchidaceae | 4414 | *Cryptostylis erecta* | | Tartan Tongue Orchid | P | | 7 | |

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|---|---|---|---|---|---|---|---|---|---|
| Plantae | Flora | Orchidaceae | 4417 | *Cryptostylis subulata* | | Large Tongue Orchid | P | 3 | |
| Plantae | Flora | Orchidaceae | 4419 | *Cymbidium suave* | | Snake Orchid | P | 5 | |
| Plantae | Flora | Orchidaceae | 4426 | *Dendrobium linguiforme* | | Tongue Orchid | P | 2 | |
| Plantae | Flora | Orchidaceae | 6630 | *^Dendrobium melaleucaphilum* | | Spider orchid | E1,P,2 | 21 | |
| Plantae | Flora | Orchidaceae | 7888 | *Dipodium variegatum* | | | P | 1 | |
| Plantae | Flora | Orchidaceae | 4453 | *Diuris punctata* | | Purple Donkey Orchid | P | 1 | |
| Plantae | Flora | Orchidaceae | 4463 | *Gastrodia sesamoides* | | Cinnamon Bells | P | 1 | |
| Plantae | Flora | Orchidaceae | 4483 | *Plectorrhiza tridentata* | | Tangle Orchid | P | 2 | |
| Plantae | Flora | Orchidaceae | 8965 | *Pseudovanilla foliata* | | Great Climbing Orchid | P | 1 | |
| Plantae | Flora | Orchidaceae | THEL | *Thelymitra spp.* | | | P | 1 | |
| Plantae | Flora | Osmundaceae | 8151 | *Todea barbara* | | King Fern | P | 1 | |
| Plantae | Flora | Oxalidaceae | 4621 | *Oxalis perennans* | | | | 2 | |
| Plantae | Flora | Oxalidaceae | OXAL | *Oxalis spp.* | | | | 2 | |
| Plantae | Flora | Passifloraceae | 4643 | *Passiflora edulis* | * | Common Passionfruit | | 1 | |
| Plantae | Flora | Passifloraceae | 4646 | *Passiflora herbertiana* | | | | 2 | |
| Plantae | Flora | Passifloraceae | 4650 | *Passiflora subpeltata* | * | White Passionflower | | 4 | |
| Plantae | Flora | Philydraceae | 7065 | *Philydrum lanuginosum* | | Frogsmouth | | 16 | |
| Plantae | Flora | Phormiaceae | 7664 | *Thelionema caespitosum* | | Tufted Blue-lily | | 1 | |
| Plantae | Flora | Phyllanthaceae | 2695 | *Breynia oblongifolia* | | Coffee Bush | | 31 | |
| Plantae | Flora | Phyllanthaceae | 2696 | *Bridelia exaltata* | | Brush Ironbark | | 1 | |
| Plantae | Flora | Phyllanthaceae | 7866 | *Glochidion ferdinandi* | | Cheese Tree | | 38 | |
| Plantae | Flora | Phyllanthaceae | 9360 | *Glochidion ferdinandi var. ferdinandi* | | Cheese Tree | | 3 | |
| Plantae | Flora | Phyllanthaceae | 7395 | *Poranthera microphylla* | | Small Poranthera | | 4 | |
| Plantae | Flora | Phytolaccaceae | 4658 | *Phytolacca octandra* | * | Inkweed | | 5 | |
| Plantae | Flora | Pinaceae | 11138 | *Pinus elliottii* | * | Slash Pine | | 3 | |
| Plantae | Flora | Pinaceae | 4661 | *Pinus radiata* | * | Radiata Pine | | 2 | |
| Plantae | Flora | Pittosporaceae | 4671 | *Billardiera scandens* | | Hairy Apple Berry | | 17 | |
| Plantae | Flora | Pittosporaceae | 4678 | *Hymenosporum flavum* | | Native Frangipani | | 6 | |
| Plantae | Flora | Pittosporaceae | 11204 | *Pittosporum multiflorum* | | Orange Thorn | | 3 | |
| Plantae | Flora | Pittosporaceae | 4683 | *Pittosporum revolutum* | | Rough Fruit Pittosporum | | 7 | |
| Plantae | Flora | Pittosporaceae | 4685 | *Pittosporum undulatum* | | Sweet Pittosporum | | 9 | |
| Plantae | Flora | Plantaginaceae | 4699 | *Plantago lanceolata* | * | Lamb's Tongues | | 8 | |
| Plantae | Flora | Poaceae | 8979 | *Alexfloydia repens* | | Floyd's Grass | E1 | 10 | |
| Plantae | Flora | Poaceae | 4748 | *Andropogon virginicus* | * | Whisky Grass | | 21 | |
| Plantae | Flora | Poaceae | 4773 | *Aristida vagans* | | Threeawn Speargrass | | 2 | |
| Plantae | Flora | Poaceae | 9603 | *Austrostipa pubescens* | | | | 1 | |
| Plantae | Flora | Poaceae | 11194 | *Axonopus fissifolius* | * | Narrow-leafed Carpet Grass | | 13 | |
| Plantae | Flora | Poaceae | 4800 | *Briza maxima* | * | Quaking Grass | | 3 | |
| Plantae | Flora | Poaceae | 4801 | *Briza minor* | * | Shivery Grass | | 5 | |
| Plantae | Flora | Poaceae | 7813 | *Bromus catharticus* | * | Praire Grass | | 3 | |
| Plantae | Flora | Poaceae | 14903 | *Cenchrus clandestinus* | * | Kikuyu Grass | | 10 | |
| Plantae | Flora | Poaceae | 6890 | *Cenchrus echinatus* | * | Mossman River Grass | | 1 | |
| Plantae | Flora | Poaceae | 4831 | *Chloris gayana* | * | Rhodes Grass | | 13 | |
| Plantae | Flora | Poaceae | 4838 | *Coix lacryma-jobi* | * | Job's Tears | | 1 | |
| Plantae | Flora | Poaceae | 4841 | *Cymbopogon refractus* | | Barbed Wire Grass | | 5 | |
| Plantae | Flora | Poaceae | 6540 | *Cynodon dactylon* | | Common Couch | | 8 | |
| Plantae | Flora | Poaceae | 4898 | *Dichelachne micrantha* | | Shorthair Plumegrass | | 1 | |
| Plantae | Flora | Poaceae | 6554 | *Digitaria ciliaris* | * | Summer Grass | | 1 | |
| Plantae | Flora | Poaceae | 4913 | *Digitaria parviflora* | | Small-flowered Finger Grass | | 4 | |
| Plantae | Flora | Poaceae | 4934 | *Echinopogon ovatus* | | Forest Hedgehog Grass | | 1 | |
| Plantae | Flora | Poaceae | ECHN | *Echinopogon spp.* | | | | 1 | |
| Plantae | Flora | Poaceae | 4937 | *Ehrharta erecta* | * | Panic Veldtgrass | | 2 | |
| Plantae | Flora | Poaceae | 4946 | *Entolasia marginata* | | Bordered Panic | | 10 | |
| Plantae | Flora | Poaceae | 4947 | *Entolasia stricta* | | Wiry Panic | | 30 | |
| Plantae | Flora | Poaceae | 7921 | *Eragrostis brownii* | | Brown's Lovegrass | | 4 | |
| Plantae | Flora | Poaceae | 4952 | *Eragrostis curvula* | * | African Lovegrass | | 1 | |
| Plantae | Flora | Poaceae | 4960 | *Eragrostis leptostachya* | | Paddock Lovegrass | | 1 | |
| Plantae | Flora | Poaceae | ERAG | *Eragrostis spp.* | | | | 1 | |
| Plantae | Flora | Poaceae | 5001 | *Hemarthria uncinata* | | Matgrass | | 6 | |
| Plantae | Flora | Poaceae | 6803 | *Imperata cylindrica* | | Blady Grass | | 42 | |
| Plantae | Flora | Poaceae | 5017 | *Isachne globosa* | | Swamp Millet | | 1 | |
| Plantae | Flora | Poaceae | 6867 | *Ischaemum australe* | | | | 2 | |
| Plantae | Flora | Poaceae | 9278 | *Ischaemum australe var. australe* | | | | 1 | |

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|---|---|---|---|---|---|---|---|---|
| Plantae | Flora | Poaceae | 11388 | *Lachnagrostis filiformis* | | | | 2 |
| Plantae | Flora | Poaceae | 14001 | *Megathyrsus maximus* | * | | | 2 |
| Plantae | Flora | Poaceae | 7291 | *Melinis minutiflora* | * | Molasses Grass | | 1 |
| Plantae | Flora | Poaceae | 10904 | *Melinis repens* | * | Red Natal Grass | | 1 |
| Plantae | Flora | Poaceae | 5037 | *Microlaena stipoides* | | Weeping Grass | | 2 |
| Plantae | Flora | Poaceae | 7707 | *Microlaena stipoides var. stipoides* | | Weeping Grass | | 1 |
| Plantae | Flora | Poaceae | 5044 | *Oplismenus aemulus* | | | | 14 |
| Plantae | Flora | Poaceae | 5045 | *Oplismenus imbecillis* | | | | 11 |
| Plantae | Flora | Poaceae | OPLI | *Oplismenus spp.* | | | | 1 |
| Plantae | Flora | Poaceae | 5048 | *Ottochloa gracillima* | | | | 16 |
| Plantae | Flora | Poaceae | 5055 | *Panicum effusum* | | Hairy Panic | | 1 |
| Plantae | Flora | Poaceae | 5063 | *Panicum pygmaeum* | | Pygmy Panic | | 2 |
| Plantae | Flora | Poaceae | 5065 | *Panicum repens* | * | Torpedo Grass | | 1 |
| Plantae | Flora | Poaceae | 7486 | *Panicum schinzii* | * | | | 1 |
| Plantae | Flora | Poaceae | 5066 | *Panicum simile* | | Two-colour Panic | | 7 |
| Plantae | Flora | Poaceae | 5073 | *Paspalidium aversum* | | Bent Summer Grass | | 1 |
| Plantae | Flora | Poaceae | 7172 | *Paspalidium distans* | | | | 5 |
| Plantae | Flora | Poaceae | 9327 | *Paspalum ciliatifolium* | * | One-spiked Paspalum | | 1 |
| Plantae | Flora | Poaceae | 5086 | *Paspalum dilatatum* | * | Paspalum | | 19 |
| Plantae | Flora | Poaceae | 5087 | *Paspalum distichum* | | Water Couch | | 10 |
| Plantae | Flora | Poaceae | 12421 | *Paspalum mandiocanum* | * | Broadleaf Paspalum | | 21 |
| Plantae | Flora | Poaceae | 5088 | *Paspalum notatum* | * | Bahia Grass | | 2 |
| Plantae | Flora | Poaceae | 5089 | *Paspalum orbiculare* | | Ditch Millet | | 2 |
| Plantae | Flora | Poaceae | 10355 | *Paspalum regnellii* | * | | | 2 |
| Plantae | Flora | Poaceae | 7806 | *Paspalum scrobiculatum* | * | Scrobic | | 1 |
| Plantae | Flora | Poaceae | PASP | *Paspalum spp.* | | | | 2 |
| Plantae | Flora | Poaceae | 5093 | *Paspalum urvillei* | * | Vasey Grass | | 8 |
| Plantae | Flora | Poaceae | 5113 | *Phragmites australis* | | Common Reed | | 21 |
| Plantae | Flora | Poaceae | 5114 | *Phyllostachys aurea* | * | Fishpole Bamboo | | 1 |
| Plantae | Flora | Poaceae | 11196 | *Poa labillardierei var. labillardierei* | | Tussock | | 2 |
| Plantae | Flora | Poaceae | POA | *Poa spp.* | | | | 2 |
| Plantae | Flora | Poaceae | 5165 | *Setaria palmifolia* | * | Palm Grass | | 1 |
| Plantae | Flora | Poaceae | 7842 | *Setaria pumila* | * | Pale Pigeon Grass | | 2 |
| Plantae | Flora | Poaceae | 5167 | *Setaria sphacelata* | * | South African Pigeon Grass | | 6 |
| Plantae | Flora | Poaceae | SETA | *Setaria spp.* | | | | 2 |
| Plantae | Flora | Poaceae | 5169 | *Setaria verticillata* | * | Whorled Pigeon Grass | | 2 |
| Plantae | Flora | Poaceae | 5176 | *Sporobolus africanus* | * | Parramatta Grass | | 9 |
| Plantae | Flora | Poaceae | 5181 | *Sporobolus elongatus* | | Slender Rat's Tail Grass | | 1 |
| Plantae | Flora | Poaceae | 11172 | *Sporobolus fertilis* | * | Giant Parramatta Grass | | 3 |
| Plantae | Flora | Poaceae | 6543 | *Sporobolus indicus* | * | Parramatta Grass | | 1 |
| Plantae | Flora | Poaceae | SPOR | *Sporobolus spp.* | | Rat's Tail Couch | | 1 |
| Plantae | Flora | Poaceae | 5184 | *Sporobolus virginicus* | | | | 1 |
| Plantae | Flora | Poaceae | 9224 | *Sporobolus virginicus var. minor* | | Marine Couch | | 2 |
| Plantae | Flora | Poaceae | 5185 | *Stenotaphrum secundatum* | * | Buffalo Grass | | 2 |
| Plantae | Flora | Poaceae | 7770 | *Themeda triandra* | | | | 26 |
| Plantae | Flora | Polygalaceae | 8894 | *Polygala paniculata* | * | | | 1 |
| Plantae | Flora | Polygonaceae | 7568 | *Persicaria decipiens* | | Slender Knotweed | | 5 |
| Plantae | Flora | Polygonaceae | 5279 | *Persicaria dichotoma* | | | | 3 |
| Plantae | Flora | Polygonaceae | 5281 | *Persicaria hydropiper* | | Water Pepper | | 5 |
| Plantae | Flora | Polygonaceae | 8887 | *Persicaria praetermissa* | | | | 2 |
| Plantae | Flora | Polygonaceae | PERC | *Persicaria spp.* | | Knotweed | | 1 |
| Plantae | Flora | Polygonaceae | 5286 | *Persicaria strigosa* | | | | 16 |
| Plantae | Flora | Polygonaceae | 5296 | *Rumex brownii* | | Swamp Dock | | 1 |
| Plantae | Flora | Polygonaceae | RUME | *Rumex spp.* | | Dock | | 1 |
| Plantae | Flora | Polypodiaceae | 8159 | *Platycerium bifurcatum* | | Elkhorn Fern | P | 8 |
| Plantae | Flora | Polypodiaceae | 8161 | *Platycerium superbum* | | Staghorn | P | 4 |
| Plantae | Flora | Polypodiaceae | 11148 | *Pyrrosia confluens var. confluens* | | Horseshoe Felt Fern | | 4 |
| Plantae | Flora | Primulaceae | 7459 | *Aegiceras corniculatum* | | River Mangrove | | 1 |
| Plantae | Flora | Primulaceae | 3959 | *Embelia australiana* | | | | 1 |
| Plantae | Flora | Primulaceae | 14614 | *Lysimachia arvensis* | * | Scarlet Pimpernel | | 2 |
| Plantae | Flora | Primulaceae | 11948 | *Myrsine howittiana* | | Brush Muttonwood | | 5 |
| Plantae | Flora | Primulaceae | 11953 | *Myrsine variabilis* | | | | 6 |
| Plantae | Flora | Proteaceae | 5343 | *Banksia integrifolia* | | Coast Banksia | | 5 |
| Plantae | Flora | Proteaceae | 6603 | *Banksia integrifolia subsp. integrifolia* | | Coastal Banksia | | 2 |
| Plantae | Flora | Proteaceae | 5345 | *Banksia oblongifolia* | | Fern-leaved Banksia | | 2 |

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|---|---|---|---|---|---|---|---|---|---|
| Plantae | Flora | Proteaceae | 5348 | *Banksia serrata* | | Old-man Banksia | | | 5 |
| Plantae | Flora | Proteaceae | 5349 | *Banksia spinulosa* | | Hairpin Banksia | P | | 1 |
| Plantae | Flora | Proteaceae | 7509 | *Banksia spinulosa var. collina* | | | P | | 2 |
| Plantae | Flora | Proteaceae | 7488 | *Banksia spinulosa var. spinulosa* | | | P | | 1 |
| Plantae | Flora | Proteaceae | 5396 | *Grevillea robusta* | | Silky Oak | | | 2 |
| Plantae | Flora | Proteaceae | 5445 | *Lomatia silaifolia* | | Crinkle Bush | P | | 5 |
| Plantae | Flora | Proteaceae | 8597 | *Persoonia conjuncta* | | | P | | 10 |
| Plantae | Flora | Proteaceae | 5462 | *Persoonia levis* | | Broad-leaved Geebung | P | | 2 |
| Plantae | Flora | Proteaceae | 5463 | *Persoonia linearis* | | Narrow-leaved Geebung | P | | 2 |
| Plantae | Flora | Proteaceae | 8684 | *Persoonia media* | | | P | | 1 |
| Plantae | Flora | Proteaceae | 5472 | *Persoonia sericea* | | | P | | 1 |
| Plantae | Flora | Proteaceae | PERS | *Persoonia spp.* | | | P | | 4 |
| Plantae | Flora | Proteaceae | 8596 | *Persoonia stradbrokensis* | | | P | | 5 |
| Plantae | Flora | Proteaceae | 5477 | *Petrophile canescens* | | Conesticks | P | | 1 |
| Plantae | Flora | Pteridaceae | 7997 | *Adiantum aethiopicum* | | Common Maidenhair | P | | 2 |
| Plantae | Flora | Pteridaceae | 8000 | *Adiantum hispidulum* | | Rough Maidenhair | P | | 3 |
| Plantae | Flora | Pteridaceae | ADIA | *Adiantum spp.* | | | P | | 1 |
| Plantae | Flora | Pteridaceae | 10439 | *Cheilanthes sieberi* | | Rock Fern | | | 1 |
| Plantae | Flora | Pteridaceae | 8007 | *Cheilanthes sieberi subsp. sieberi* | | Rock Fern | | | 1 |
| Plantae | Flora | Putranjivaceae | 11864 | *Drypetes deplanchei* | | Yellow Tulipwood | | | 1 |
| Plantae | Flora | Ranunculaceae | 5495 | *Clematis glycinoides* | | Headache Vine | | | 1 |
| Plantae | Flora | Ranunculaceae | 5507 | *Ranunculus inundatus* | | River Buttercup | | | 9 |
| Plantae | Flora | Ranunculaceae | 5508 | *Ranunculus lappaceus* | | Common Buttercup | | | 2 |
| Plantae | Flora | Restionaceae | 10612 | *Baloskion tetraphyllum* | | | | | 3 |
| Plantae | Flora | Rhamnaceae | 7686 | *Alphitonia excelsa* | | Red Ash | | | 40 |
| Plantae | Flora | Rhamnaceae | 5583 | *Pomaderris ligustrina* | | Privet Pomaderris | | | 2 |
| Plantae | Flora | Rhamnaceae | POMA | *Pomaderris spp.* | | | | | 1 |
| Plantae | Flora | Ripogonaceae | 6018 | *Ripogonum album* | | White Supplejack | | | 5 |
| Plantae | Flora | Ripogonaceae | 7368 | *Ripogonum brevifolium* | | Small-leaved Supplejack | | | 1 |
| Plantae | Flora | Ripogonaceae | 6019 | *Ripogonum discolor* | | Prickly Supplejack | | | 1 |
| Plantae | Flora | Ripogonaceae | 6020 | *Ripogonum elseyanum* | | Hairy Supplejack | | | 1 |
| Plantae | Flora | Ripogonaceae | 6021 | *Ripogonum fawcettianum* | | Small Supplejack | | | 3 |
| Plantae | Flora | Rosaceae | 5625 | *Prunus persica* | * | | | | 1 |
| Plantae | Flora | Rosaceae | 11303 | *Rubus fruticosus sp. agg.* | * | Blackberry complex | | | 1 |
| Plantae | Flora | Rosaceae | 11587 | *Rubus moluccanus* | | Molucca Bramble | | | 2 |
| Plantae | Flora | Rosaceae | 11236 | *Rubus moluccanus var. trilobus* | | Molucca Bramble | | | 5 |
| Plantae | Flora | Rosaceae | 9917 | *Rubus nebulosus* | | Green-leaved Bramble | | | 2 |
| Plantae | Flora | Rosaceae | 5642 | *Rubus parvifolius* | | Native Raspberry | | | 3 |
| Plantae | Flora | Rosaceae | 5645 | *Rubus rosifolius* | | Rose-leaf Bramble | | | 4 |
| Plantae | Flora | Rosaceae | 10813 | *Rubus rosifolius var. rosifolius* | | | | | 1 |
| Plantae | Flora | Rosaceae | 5646 | *Rubus ulmifolius* | * | Blackberry | | | 2 |
| Plantae | Flora | Rubiaceae | 11599 | *Cyclophyllum longipetalum* | | Coast Canthium | | | 3 |
| Plantae | Flora | Rubiaceae | 14922 | *Gynochthodes jasminoides* | | Sweet Morinda | | | 14 |
| Plantae | Flora | Rubiaceae | 5703 | *Pomax umbellata* | | Pomax | | | 4 |
| Plantae | Flora | Rubiaceae | 5706 | *Psychotria loniceroides* | | Hairy Psychotria | | | 3 |
| Plantae | Flora | Rutaceae | 6457 | *Acronychia littoralis* | | Scented Acronychia | E1 | E | 1 |
| Plantae | Flora | Rutaceae | 5722 | *Acronychia oblongifolia* | | White Aspen | | | 11 |
| Plantae | Flora | Rutaceae | 5728 | *Asterolasia correifolia* | | | | | 1 |
| Plantae | Flora | Rutaceae | 10758 | *Citrus x taitensis* | * | Rough Lemon | | | 2 |
| Plantae | Flora | Rutaceae | 5796 | *Flindersia schottiana* | | Cudgerie | | | 1 |
| Plantae | Flora | Rutaceae | 8625 | *Melicope micrococca* | | Hairy-leaved Doughwood | | | 3 |
| Plantae | Flora | Rutaceae | 5847 | *Zieria smithii* | | Sandfly Zieria | | | 10 |
| Plantae | Flora | Salviniaceae | 8178 | *Salvinia molesta* | * | | | | 2 |
| Plantae | Flora | Santalaceae | 5860 | *Exocarpos cupressiformis* | | Cherry Ballart | | | 2 |
| Plantae | Flora | Santalaceae | 5864 | *Exocarpos strictus* | | Dwarf Cherry | | | 1 |
| Plantae | Flora | Sapindaceae | 5875 | *Alectryon subcinereus* | | Wild Quince | | | 2 |
| Plantae | Flora | Sapindaceae | 5884 | *Cupaniopsis anacardioides* | | Tuckeroo | | | 16 |
| Plantae | Flora | Sapindaceae | CUPA | *Cupaniopsis spp.* | | | | | 1 |
| Plantae | Flora | Sapindaceae | 5911 | *Dodonaea triquetra* | | Large-leaf Hop-bush | | | 16 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Plantae | Flora | Sapindaceae | 5917 | *Guioa semiglauca* | | Guioa | | 10 |
| Plantae | Flora | Sapindaceae | 12514 | *Jagera pseudorhus var. pseudorhus* | | Foambark Tree | | 15 |
| Plantae | Flora | Sapindaceae | 5926 | *Mischocarpus pyriformis* | | Yellow Pear-fruit | | 2 |
| Plantae | Flora | Sapindaceae | 10870 | *Rhysotoechia bifoliolata subsp. bifoliolata* | | Two-leaved Tuckeroo | | 1 |
| Plantae | Flora | Schizaeaceae | 8179 | *Lygodium microphyllum* | | Climbing Snake Fern | | 1 |
| Plantae | Flora | Scrophulariaceae | 5945 | *Bacopa monnieri* | | Bacopa | | 3 |
| Plantae | Flora | Selaginellaceae | 8187 | *Selaginella uliginosa* | | Swamp Selaginella | | 1 |
| Plantae | Flora | Smilacaceae | 7592 | *Smilax australis* | | Lawyer Vine | | 15 |
| Plantae | Flora | Smilacaceae | 6022 | *Smilax glyciphylla* | | Sweet Sarsparilla | | 15 |
| Plantae | Flora | Solanaceae | 6027 | *Cestrum parqui* | * | Green Cestrum | | 1 |
| Plantae | Flora | Solanaceae | 6036 | *Duboisia myoporoides* | | Corkwood | | 14 |
| Plantae | Flora | Solanaceae | 6050 | *Nicotiana suaveolens* | | Native Tobacco | | 1 |
| Plantae | Flora | Solanaceae | 7325 | *Solanum capsicoides* | * | Devil's Apple | | 1 |
| Plantae | Flora | Solanaceae | 12294 | *Solanum hapalum* | | | | 2 |
| Plantae | Flora | Solanaceae | 6090 | *Solanum mauritianum* | * | Wild Tobacco Bush | | 13 |
| Plantae | Flora | Solanaceae | 6091 | *Solanum nigrum* | * | Black-berry Nightshade | | 4 |
| Plantae | Flora | Solanaceae | 6101 | *Solanum pseudocapsicum* | * | Madeira Winter Cherry | | 3 |
| Plantae | Flora | Solanaceae | SOLA | *Solanum spp.* | | | | 3 |
| Plantae | Flora | Solanaceae | 6115 | *Solanum vescum* | | | | 2 |
| Plantae | Flora | Sparganiaceae | 6767 | *Sparganium subglobosum* | | Floating Bur-reed | | 2 |
| Plantae | Flora | Symplocaceae | 6165 | *Symplocos stawellii* | | White Hazelwood | | 1 |
| Plantae | Flora | Theaceae | 11595 | *Camellia japonica* | * | Camellia | | 1 |
| Plantae | Flora | Thelypteridaceae | CHRI | *Christella spp.* | | | | 1 |
| Plantae | Flora | Thelypteridaceae | 14610 | *Cyclosorus dentatus* | | Binung | | 1 |
| Plantae | Flora | Thelypteridaceae | 8190 | *Cyclosorus interruptus* | | | | 4 |
| Plantae | Flora | Thymelaeaceae | 6181 | *Pimelea ligustrina* | | | | 5 |
| Plantae | Flora | Thymelaeaceae | 6182 | *Pimelea linifolia* | | Slender Rice Flower | | 4 |
| Plantae | Flora | Thymelaeaceae | 6814 | *Pimelea linifolia subsp. linifolia* | | | | 3 |
| Plantae | Flora | Thymelaeaceae | 6197 | *Wikstroemia indica* | | | | 4 |
| Plantae | Flora | Typhaceae | 6217 | *Typha orientalis* | | Broad-leaved Cumbungi | | 4 |
| Plantae | Flora | Typhaceae | TYPH | *Typha spp.* | | | | 5 |
| Plantae | Flora | Ulmaceae | 6761 | *Trema tomentosa var. aspera* | | Native Peach | | 6 |
| Plantae | Flora | Uvulariaceae | 7346 | *Tripladenia cunninghamii* | | | | 4 |
| Plantae | Flora | Verbenaceae | 6248 | *Lantana camara* | * | Lantana | | 47 |
| Plantae | Flora | Verbenaceae | 6256 | *Verbena bonariensis* | * | Purpletop | | 14 |
| Plantae | Flora | Verbenaceae | 10718 | *Verbena incompta* | * | | | 1 |
| Plantae | Flora | Verbenaceae | 10720 | *Verbena quadrangularis* | * | | | 1 |
| Plantae | Flora | Verbenaceae | 11406 | *Verbena rigida var. rigida* | * | Veined Verbena | | 1 |
| Plantae | Flora | Violaceae | 6266 | *Hybanthus monopetalus* | | Slender Violet-bush | | 1 |
| Plantae | Flora | Violaceae | 9769 | *Hybanthus stellarioides* | | | | 1 |
| Plantae | Flora | Violaceae | 11863 | *Viola banksii* | | | | 2 |
| Plantae | Flora | Violaceae | 6272 | *Viola hederacea* | | Ivy-leaved Violet | | 12 |
| Plantae | Flora | Viscaceae | 6276 | *Korthalsella rubra* | | | | 1 |
| Plantae | Flora | Viscaceae | 6279 | *Notothixos subaureus* | | Golden Mistletoe | | 1 |
| Plantae | Flora | Vitaceae | 6281 | *Cayratia clematidea* | | Native Grape | | 1 |
| Plantae | Flora | Vitaceae | 6282 | *Cissus antarctica* | | Water Vine | | 7 |
| Plantae | Flora | Vitaceae | 6283 | *Cissus hypoglauca* | | Giant Water Vine | | 18 |
| Plantae | Flora | Vitaceae | 6286 | *Cissus sterculiifolia* | | Yaroong | | 1 |
| Plantae | Flora | Vitaceae | 14093 | *Clematicissus opaca* | | Pepper Vine | | 1 |
| Plantae | Flora | Xanthorrhoeaceae | 9309 | *Xanthorrhoea latifolia subsp. latifolia* | | | P | 1 |
| Plantae | Flora | Xanthorrhoeaceae | 6318 | *Xanthorrhoea macronema* | | | P | 6 |
| Plantae | Flora | Xanthorrhoeaceae | XANT | *Xanthorrhoea spp.* | | | P | 2 |
| Plantae | Flora | Zingiberaceae | 6913 | *Alpinia arundelliana* | | Native Ginger | | 6 |

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|---|---|---|---|---|---|---|
| Plantae | Flora | Zingiberaceae | 6340 | *Alpinia caerulea* | Native Ginger | 1 |
| Plantae | Flora | Zingiberaceae | 6787 | *Hedychium gardnerianum* * | Ginger Lily | 1 |

SEED | Sharing and Enabling Environmental Data

# Plant Community Types - Macksville Bridge




0.3 0 0.17 0.3 Kilometers

Scale 1: 6,647.06

WGS_1984_Web_Mercator_Auxiliary_Sphere

Generated from SEED web map. Created 3:26 PM 16/5/2023

# Legend

## Plant Community Type with labels

- (Not classified) Not classified
- (Rainforests) Lismore Basalt Subtropical Rainforest
- (Dry Sclerophyll Forests (Shrub/grass sub-formation)) Southwest Rockplate Shrub Woodland
- (Rainforests) Lower Richmond Hills Dry-Subtropical Rainforest
- (Grasslands) Yass Gorge Rhyolite Grassland
- (Wet Sclerophyll Forests (Shrubby sub-formation)) Northern Escarpment New England Blackbutt Wet Forest
- (Wet Sclerophyll Forests (Grassy sub-formation)) Lower North White Mahogany-Spotted Gum Moist Forest
- (Wet Sclerophyll Forests (Shrubby sub-formation)) Northern Escarpment New England Blackbutt-Tallowwood Wet Forest
- (Grassy Woodlands) Jounama Snow Gum Shrub Woodland
- (Wet Sclerophyll Forests (Grassy sub-formation)) Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
- (Grassy Woodlands) Macleay Gorge Rims Shrub Woodland
- (Dry Sclerophyll Forests (Shrub/grass sub-formation)) Southeast Hinterland Dry Grassy Forest
- (Wet Sclerophyll Forests (Grassy sub-formation)) Southern Tableland Swamp Flats Shrub Woodland
- (Grassy Woodlands) Rough-Barked Apple - red gum - Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South Bioregion
- (Dry Sclerophyll Forests (Shrubby sub-formation)) Red Ironbark - Black Cypress Pine - stringybark +/- Narrow-leaved Wattle shrubby open forest on sandstone in the Gulgong - Mendooran region, southern Brigalow Belt South Bioregion
- <Null>
- (Alpine Complex) Alpine Short Herbfield
- (Alpine Complex) Alpine Snowpatch
- Feldmark
- (Alpine Complex) Alpine Snowpatch Grassland
- (Alpine Complex) Alpine Snowpatch Herbfield
- (Alpine Complex) Alpine Windswept Feldmark
- (Alpine Complex) Alpine and sub-alpine peatlands, damp herbfields and fens, South Eastern Highlands Bioregion and Australian Alps Bioregion
- (Alpine Complex) Kosciuszko Alpine Wet Heath
- (Alpine Complex) Kosciuszko Frost Hollow Grassland
- (Alpine Complex) Kosciuszko Frost Hollow Grassy Open Heath
- (Alpine Complex) Kosciuszko High Peaks Alpine Grassland
- (Alpine Complex) Kosciuszko High Plateau Grassy Open Heath
- (Alpine Complex) Kosciuszko Range Boggy Herbfield
- (Alpine Complex) Kosciuszko Rocky Podocarpus Heath
- (Alpine Complex) Kosciuszko Subalpine Valley Damp Heath
- (Alpine Complex) Kosciuszko Subalpine Valley Wet Meadow
- (Alpine Complex) Namadgi Subalpine Rocky Shrubland
- (Alpine Complex) Nimmo-Long Plain Frosty Dry Grassland
- (Arid Shrublands (Acacia sub-formation)) Bastard Mulga tall open shrubland of the semi-arid (hot) and arid climate zones
- (Arid Shrublands (Acacia sub-formation)) Black Box - Gidgee - chenopod low open woodland wetland on alluvial clay soils in the Culgoa River region of the Darling Riverine Plains Bioregion an*
- (Arid Shrublands (Acacia sub-formation)) Black Oak - Western Rosewood - bluebush/saltbush low sparse woodland on gravel downs in the arid climate zone
- (Arid Shrublands (Acacia sub-formation)) arid climate zone
- (Arid Shrublands (Acacia sub-formation)) Cabbage-tree Wattle shrubland of the inland plains and drainage lines
- (Arid Shrublands (Acacia sub-formation)) Curly Mallee - bluebush open woodland of the arid zone
- (Arid Shrublands (Acacia sub-formation)) Derived mixed shrubland on loamy-clay soils in the Cobar Peneplain Bioregion
- (Arid Shrublands (Acacia sub-formation)) Gidgee chenopod woodland on red-brown clays in the semi-arid (hot) climate zone mainly in the Mulga Lands Bioregion.
- (Arid Shrublands (Acacia sub-formation)) Gidgee of the intermittent watercourses or the arid zone (mainly Channel Country Bioregion and Simpson Strezlecki Dunefields Bioregion)
- (Arid Shrublands (Acacia sub-formation)) Heather Bush - Mulga - Umbrella Mulga open shrubland on gravelly rises mainly in the Mulga Lands Bioregion
- (Arid Shrublands (Acacia sub-formation)) Hooked Needlewood - Needlewood - Mulga - Turpentine Bush open shrubland of the semi-arid and arid plains
- (Arid Shrublands (Acacia sub-formation)) Horse Mulga - Umbrella Mulga shrubland on ranges in the arid and semi-arid climate zones
- (Arid Shrublands (Acacia sub-formation)) Leopardwood low woodland mainly on clayey soils in the semi-arid zone
- (Arid Shrublands (Acacia sub-formation)) Mulga - Dead Finish on stony hills mainly of the Channel Country Bioregion and Broken Hill Complex Bioregion
- (Arid Shrublands (Acacia sub-formation)) Mulga - Ironwood shrubland on loams and clays mainly of the Cobar Peneplain Bioregion
- (Arid Shrublands (Acacia sub-formation)) Mulga - Rock Fuchsia-bush sparse shrubland of silcrete scarps and mesas of the Channel Country Bioregion
- (Arid Shrublands (Acacia sub-formation)) Mulga shrubland on stony rises in the arid and semi-arid climate zones, mainly in the
- (Arid Shrublands (Acacia sub-formation)) Murrays Wattle sparse shrubland/forbland on sand rises of the Darling Riverine Plains Bioregion
- (Arid Shrublands (Acacia sub-formation)) Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.
- (Arid Shrublands (Acacia sub-formation)) Nelia tall open shrubland of semi-arid sandplains
- (Arid Shrublands (Acacia sub-formation)) Porcupine Grass - Red Mallee - Gum Coolabah hummock grassland / low sparse woodland on metamorphic ranges on the Barrier Range, Broken Hill Complex B*
- (Arid Shrublands (Acacia sub-formation)) Prickly Wattle tall open shrubland of dunes and sandplains of semi-arid and arid regions
- (Arid Shrublands (Acacia sub-formation)) Purple Wood wattle shrubland of the arid zone sandplains
- (Arid Shrublands (Acacia sub-formation)) Sandhill Wattle open shrubland on sand ridges mainly in the arid zone
- (Arid Shrublands (Acacia sub-formation)) Sandplain Mulga tall shrubland - open shrubland of the semi-arid and arid climate zones
- (Arid Shrublands (Acacia sub-formation)) Senna - Mulga - Needlewood open shrubland on loam-clay soils in swales and on the edges of claypans in the arid zone
- (Arid Shrublands (Acacia sub-formation)) Supplejack woodland of the NSW north-western semi-arid plains
- (Arid Shrublands (Acacia sub-formation)) White Cypress Pine - Mulga low open woodland on the stony ranges of the arid zone (far north western NSW).
- (Arid Shrublands (Acacia sub-formation)) White Cypress Pine - Mulga shrubland on plains and sandplains in the arid and semi-arid (hot summer) climate zones.
- (Arid Shrublands (Acacia sub-formation)) Whitewood - Western Rosewood low woodland of the NSW north western plains
- (Arid Shrublands (Acacia sub-formation))

# EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 12-May-2023

# Summary

## Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

| | |
|---|---|
| World Heritage Properties: | None |
| National Heritage Places: | None |
| Wetlands of International Importance (Ramsar | None |
| Great Barrier Reef Marine Park: | None |
| Commonwealth Marine Area: | None |
| Listed Threatened Ecological Communities: | 6 |
| Listed Threatened Species: | 90 |
| Listed Migratory Species: | 64 |

## Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

| | |
|---|---|
| Commonwealth Lands: | 9 |
| Commonwealth Heritage Places: | 1 |
| Listed Marine Species: | 84 |
| Whales and Other Cetaceans: | 12 |
| Critical Habitats: | None |
| Commonwealth Reserves Terrestrial: | None |
| Australian Marine Parks: | None |
| Habitat Critical to the Survival of Marine Turtles: | None |

## Extra Information

This part of the report provides information that may also be relevant to the area you have

| | |
|---|---|
| State and Territory Reserves: | 4 |
| Regional Forest Agreements: | 1 |
| Nationally Important Wetlands: | 1 |
| EPBC Act Referrals: | 5 |
| Key Ecological Features (Marine): | None |
| Biologically Important Areas: | 3 |
| Bioregional Assessments: | None |
| Geological and Bioregional Assessments: | None |

# Details

## Matters of National Environmental Significance

### Listed Threatened Ecological Communities [ Resource Information ]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

| Community Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community | Endangered | Community likely to occur within area | In feature area |
| Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland | Endangered | Community likely to occur within area | In feature area |
| Littoral Rainforest and Coastal Vine Thickets of Eastern Australia | Critically Endangered | Community likely to occur within area | In buffer area only |
| Lowland Rainforest of Subtropical Australia | Critically Endangered | Community likely to occur within area | In feature area |
| Subtropical and Temperate Coastal Saltmarsh | Vulnerable | Community likely to occur within area | In feature area |
| Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions | Endangered | Community likely to occur within area | In feature area |

### Listed Threatened Species [ Resource Information ]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| null | | | |
| Mordacia praecox | | | |
| Non-parasitic Lamprey, Precocious Lamprey [81530] | Endangered | Species or species habitat likely to occur within area | In buffer area only |
| BIRD | | | |
| Anthochaera phrygia | | | |
| Regent Honeyeater [82338] | Critically Endangered | Species or species habitat known to occur within area | In feature area |

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| Botaurus poiciloptilus<br>Australasian Bittern [1001] | Endangered | Species or species habitat known to occur within area | In feature area |
| Calidris canutus<br>Red Knot, Knot [855] | Endangered | Species or species habitat known to occur within area | In feature area |
| Calidris ferruginea<br>Curlew Sandpiper [856] | Critically Endangered | Species or species habitat may occur within area | In feature area |
| Calyptorhynchus lathami lathami<br>South-eastern Glossy Black-Cockatoo [67036] | Vulnerable | Species or species habitat known to occur within area | In feature area |
| Charadrius leschenaultii<br>Greater Sand Plover, Large Sand Plover [877] | Vulnerable | Species or species habitat known to occur within area | In feature area |
| Climacteris picumnus victoriae<br>Brown Treecreeper (south-eastern) [67062] | Vulnerable | Species or species habitat known to occur within area | In feature area |
| Cyclopsitta diophthalma coxeni<br>Coxen's Fig-Parrot [59714] | Critically Endangered | Species or species habitat may occur within area | In buffer area only |
| Diomedea antipodensis<br>Antipodean Albatross [64458] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area | In feature area |
| Diomedea antipodensis gibsoni<br>Gibson's Albatross [82270] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area | In feature area |
| Diomedea epomophora<br>Southern Royal Albatross [89221] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area | In feature area |

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| Diomedea exulans<br>Wandering Albatross [89223] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area | In feature area |
| Erythrotriorchis radiatus<br>Red Goshawk [942] | Endangered | Species or species habitat may occur within area | In feature area |
| Falco hypoleucos<br>Grey Falcon [929] | Vulnerable | Species or species habitat may occur within area | In feature area |
| Fregetta grallaria grallaria<br>White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian) [64438] | Vulnerable | Species or species habitat likely to occur within area | In buffer area only |
| Grantiella picta<br>Painted Honeyeater [470] | Vulnerable | Species or species habitat may occur within area | In feature area |
| Hirundapus caudacutus<br>White-throated Needletail [682] | Vulnerable | Species or species habitat known to occur within area | In feature area |
| Lathamus discolor<br>Swift Parrot [744] | Critically Endangered | Species or species habitat known to occur within area | In feature area |
| Limosa lapponica baueri<br>Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380] | Vulnerable | Species or species habitat known to occur within area | In buffer area only |
| Macronectes giganteus<br>Southern Giant-Petrel, Southern Giant Petrel [1060] | Endangered | Species or species habitat may occur within area | In feature area |
| Macronectes halli<br>Northern Giant Petrel [1061] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area | In feature area |
| Melanodryas cucullata cucullata<br>South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093] | Endangered | Species or species habitat may occur within area | In buffer area only |

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| Neophema chrysostoma<br>Blue-winged Parrot [726] | Vulnerable | Species or species habitat may occur within area | In feature area |
| Numenius madagascariensis<br>Eastern Curlew, Far Eastern Curlew [847] | Critically Endangered | Species or species habitat known to occur within area | In feature area |
| Pachyptila turtur subantarctica<br>Fairy Prion (southern) [64445] | Vulnerable | Species or species habitat likely to occur within area | In feature area |
| Phoebetria fusca<br>Sooty Albatross [1075] | Vulnerable | Species or species habitat may occur within area | In buffer area only |
| Pterodroma leucoptera leucoptera<br>Gould's Petrel, Australian Gould's Petrel [26033] | Endangered | Species or species habitat may occur within area | In buffer area only |
| Pterodroma neglecta neglecta<br>Kermadec Petrel (western) [64450] | Vulnerable | Foraging, feeding or related behaviour may occur within area | In buffer area only |
| Rostratula australis<br>Australian Painted Snipe [77037] | Endangered | Species or species habitat likely to occur within area | In feature area |
| Stagonopleura guttata<br>Diamond Firetail [59398] | Vulnerable | Species or species habitat likely to occur within area | In feature area |
| Sternula nereis nereis<br>Australian Fairy Tern [82950] | Vulnerable | Species or species habitat may occur within area | In feature area |
| Thalassarche bulleri<br>Buller's Albatross, Pacific Albatross [64460] | Vulnerable | Species or species habitat may occur within area | In feature area |
| Thalassarche bulleri platei<br>Northern Buller's Albatross, Pacific Albatross [82273] | Vulnerable | Species or species habitat may occur within area | In feature area |

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| Thalassarche carteri<br>Indian Yellow-nosed Albatross [64464] | Vulnerable | Species or species habitat likely to occur within area | In buffer area only |
| Thalassarche cauta<br>Shy Albatross [89224] | Endangered | Species or species habitat may occur within area | In feature area |
| Thalassarche impavida<br>Campbell Albatross, Campbell Black-browed Albatross [64459] | Vulnerable | Species or species habitat may occur within area | In feature area |
| Thalassarche melanophris<br>Black-browed Albatross [66472] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area | In feature area |
| Thalassarche salvini<br>Salvin's Albatross [64463] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area | In feature area |
| Thalassarche steadi<br>White-capped Albatross [64462] | Vulnerable | Species or species habitat may occur within area | In feature area |
| Turnix melanogaster<br>Black-breasted Button-quail [923] | Vulnerable | Species or species habitat may occur within area | In buffer area only |
| FISH | | | |
| Epinephelus daemelii<br>Black Rockcod, Black Cod, Saddled Rockcod [68449] | Vulnerable | Species or species habitat likely to occur within area | In feature area |
| Hippocampus whitei<br>White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240] | Endangered | Species or species habitat likely to occur within area | In buffer area only |
| Seriolella brama<br>Blue Warehou [69374] | Conservation Dependent | Species or species habitat known to occur within area | In buffer area only |
| Thunnus maccoyii<br>Southern Bluefin Tuna [69402] | Conservation Dependent | Species or species habitat likely to occur within area | In feature area |

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| FROG | | | |
| Litoria aurea<br>Green and Golden Bell Frog [1870] | Vulnerable | Species or species habitat likely to occur within area | In feature area |
| Mixophyes balbus<br>Stuttering Frog, Southern Barred Frog (in Victoria) [1942] | Vulnerable | Species or species habitat known to occur within area | In buffer area only |
| Mixophyes iteratus<br>Giant Barred Frog, Southern Barred Frog [1944] | Vulnerable | Species or species habitat known to occur within area | In feature area |
| Philoria sphagnicola<br>Sphagnum Frog [59709] | Vulnerable | Species or species habitat may occur within area | In buffer area only |
| INSECT | | | |
| Argynnis hyperbius inconstans<br>Australian Fritillary [88056] | Critically Endangered | Species or species habitat may occur within area | In feature area |
| MAMMAL | | | |
| Balaenoptera musculus<br>Blue Whale [36] | Endangered | Species or species habitat may occur within area | In buffer area only |
| Chalinolobus dwyeri<br>Large-eared Pied Bat, Large Pied Bat [183] | Vulnerable | Species or species habitat likely to occur within area | In feature area |
| Dasyurus maculatus maculatus (SE mainland population)<br>Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184] | Endangered | Species or species habitat known to occur within area | In feature area |
| Eubalaena australis<br>Southern Right Whale [40] | Endangered | Species or species habitat likely to occur within area | In buffer area only |
| Notamacropus parma<br>Parma Wallaby [89289] | Vulnerable | Species or species habitat likely to occur within area | In buffer area only |
| Petauroides volans<br>Greater Glider (southern and central) [254] | Endangered | Species or species habitat known to occur within area | In feature area |

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| Petaurus australis australis | | | |
| Yellow-bellied Glider (south-eastern) [87600] | Vulnerable | Species or species habitat known to occur within area | In feature area |
| Petrogale penicillata | | | |
| Brush-tailed Rock-wallaby [225] | Vulnerable | Species or species habitat may occur within area | In buffer area only |
| Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) | | | |
| Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104] | Endangered | Species or species habitat known to occur within area | In feature area |
| Potorous tridactylus tridactylus | | | |
| Long-nosed Potoroo (northern) [66645] | Vulnerable | Species or species habitat likely to occur within area | In feature area |
| Pseudomys novaehollandiae | | | |
| New Holland Mouse, Pookila [96] | Vulnerable | Species or species habitat likely to occur within area | In feature area |
| Pteropus poliocephalus | | | |
| Grey-headed Flying-fox [186] | Vulnerable | Roosting known to occur within area | In feature area |
| PLANT | | | |
| Acronychia littoralis | | | |
| Scented Acronychia [8582] | Endangered | Species or species habitat known to occur within area | In feature area |
| Arthraxon hispidus | | | |
| Hairy-joint Grass [9338] | Vulnerable | Species or species habitat likely to occur within area | In feature area |
| Asperula asthenes | | | |
| Trailing Woodruff [14004] | Vulnerable | Species or species habitat may occur within area | In feature area |
| Cryptostylis hunteriana | | | |
| Leafless Tongue-orchid [19533] | Vulnerable | Species or species habitat likely to occur within area | In feature area |
| Cynanchum elegans | | | |
| White-flowered Wax Plant [12533] | Endangered | Species or species habitat likely to occur within area | In feature area |

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| Euphrasia arguta [4325] | Critically Endangered | Species or species habitat may occur within area | In feature area |
| Hicksbeachia pinnatifolia Monkey Nut, Bopple Nut, Red Bopple, Red Bopple Nut, Red Nut, Beef Nut, Red Apple Nut, Red Boppel Nut, Ivory Silky Oak [21189] | Vulnerable | Species or species habitat may occur within area | In buffer area only |
| Leichhardtia longiloba listed as Marsdenia longiloba Clear Milkvine [91911] | Vulnerable | Species or species habitat known to occur within area | In feature area |
| Macadamia integrifolia Macadamia Nut, Queensland Nut Tree, Smooth-shelled Macadamia, Bush Nut, Nut Oak [7326] | Vulnerable | Species or species habitat may occur within area | In feature area |
| Parsonsia dorrigoensis Milky Silkpod [64684] | Endangered | Species or species habitat known to occur within area | In feature area |
| Persicaria elatior Knotweed, Tall Knotweed [5831] | Vulnerable | Species or species habitat likely to occur within area | In feature area |
| Phaius australis Lesser Swamp-orchid [5872] | Endangered | Species or species habitat likely to occur within area | In feature area |
| Plectranthus nitidus Nightcap Plectranthus, Silver Plectranthus [55742] | Endangered | Species or species habitat may occur within area | In buffer area only |
| Rhodamnia rubescens Scrub Turpentine, Brown Malletwood [15763] | Critically Endangered | Species or species habitat known to occur within area | In feature area |
| Rhodomyrtus psidioides Native Guava [19162] | Critically Endangered | Species or species habitat known to occur within area | In feature area |
| Sarcochilus fitzgeraldii Ravine Orchid [19131] | Vulnerable | Species or species habitat may occur within area | In buffer area only |

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| [Thesium australe](#)<br>Austral Toadflax, Toadflax [15202] | Vulnerable | Species or species habitat likely to occur within area | In feature area |
| [Vincetoxicum woollsii listed as Tylophora woollsii](#)<br>[40080] | Endangered | Species or species habitat known to occur within area | In feature area |
| **REPTILE** | | | |
| [Caretta caretta](#)<br>Loggerhead Turtle [1763] | Endangered | Species or species habitat known to occur within area | In feature area |
| [Chelonia mydas](#)<br>Green Turtle [1765] | Vulnerable | Species or species habitat known to occur within area | In feature area |
| [Dermochelys coriacea](#)<br>Leatherback Turtle, Leathery Turtle, Luth [1768] | Endangered | Species or species habitat known to occur within area | In feature area |
| [Eretmochelys imbricata](#)<br>Hawksbill Turtle [1766] | Vulnerable | Species or species habitat known to occur within area | In feature area |
| [Natator depressus](#)<br>Flatback Turtle [59257] | Vulnerable | Breeding likely to occur within area | In feature area |
| **SHARK** | | | |
| [Carcharias taurus (east coast population)](#)<br>Grey Nurse Shark (east coast population) [68751] | Critically Endangered | Species or species habitat likely to occur within area | In buffer area only |
| [Carcharodon carcharias](#)<br>White Shark, Great White Shark [64470] | Vulnerable | Species or species habitat known to occur within area | In buffer area only |
| [Galeorhinus galeus](#)<br>School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453] | Conservation Dependent | Species or species habitat may occur within area | In buffer area only |
| [Rhincodon typus](#)<br>Whale Shark [66680] | Vulnerable | Species or species habitat may occur within area | In buffer area only |

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| [Sphyrna lewini](#)<br>Scalloped Hammerhead [85267] | Conservation Dependent | Species or species habitat likely to occur within area | In feature area |

## Listed Migratory Species [ Resource Information ]

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| Migratory Marine Birds | | | |
| [Anous stolidus](#)<br>Common Noddy [825] | | Species or species habitat likely to occur within area | In feature area |
| [Apus pacificus](#)<br>Fork-tailed Swift [678] | | Species or species habitat likely to occur within area | In feature area |
| [Ardenna carneipes](#)<br>Flesh-footed Shearwater, Fleshy-footed Shearwater [82404] | | Species or species habitat likely to occur within area | In buffer area only |
| [Ardenna grisea](#)<br>Sooty Shearwater [82651] | | Species or species habitat likely to occur within area | In feature area |
| [Calonectris leucomelas](#)<br>Streaked Shearwater [1077] | | Species or species habitat may occur within area | In feature area |
| [Diomedea antipodensis](#)<br>Antipodean Albatross [64458] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area | In feature area |
| [Diomedea epomophora](#)<br>Southern Royal Albatross [89221] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area | In feature area |
| [Diomedea exulans](#)<br>Wandering Albatross [89223] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area | In feature area |
| [Fregata ariel](#)<br>Lesser Frigatebird, Least Frigatebird [1012] | | Species or species habitat likely to occur within area | In feature area |

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| Fregata minor<br>Great Frigatebird, Greater Frigatebird [1013] | | Species or species habitat likely to occur within area | In feature area |
| Macronectes giganteus<br>Southern Giant-Petrel, Southern Giant Petrel [1060] | Endangered | Species or species habitat may occur within area | In feature area |
| Macronectes halli<br>Northern Giant Petrel [1061] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area | In feature area |
| Phaethon lepturus<br>White-tailed Tropicbird [1014] | | Species or species habitat known to occur within area | In feature area |
| Phoebetria fusca<br>Sooty Albatross [1075] | Vulnerable | Species or species habitat may occur within area | In buffer area only |
| Sternula albifrons<br>Little Tern [82849] | | Breeding known to occur within area | In buffer area only |
| Thalassarche bulleri<br>Buller's Albatross, Pacific Albatross [64460] | Vulnerable | Species or species habitat may occur within area | In feature area |
| Thalassarche carteri<br>Indian Yellow-nosed Albatross [64464] | Vulnerable | Species or species habitat likely to occur within area | In buffer area only |
| Thalassarche cauta<br>Shy Albatross [89224] | Endangered | Species or species habitat may occur within area | In feature area |
| Thalassarche impavida<br>Campbell Albatross, Campbell Black-browed Albatross [64459] | Vulnerable | Species or species habitat may occur within area | In feature area |
| Thalassarche melanophris<br>Black-browed Albatross [66472] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area | In feature area |

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| Thalassarche salvini<br>Salvin's Albatross [64463] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area | In feature area |
| Thalassarche steadi<br>White-capped Albatross [64462] | Vulnerable | Species or species habitat may occur within area | In feature area |
| **Migratory Marine Species** | | | |
| Balaenoptera edeni<br>Bryde's Whale [35] | | Species or species habitat may occur within area | In buffer area only |
| Balaenoptera musculus<br>Blue Whale [36] | Endangered | Species or species habitat may occur within area | In buffer area only |
| Carcharhinus longimanus<br>Oceanic Whitetip Shark [84108] | | Species or species habitat may occur within area | In buffer area only |
| Carcharodon carcharias<br>White Shark, Great White Shark [64470] | Vulnerable | Species or species habitat known to occur within area | In buffer area only |
| Caretta caretta<br>Loggerhead Turtle [1763] | Endangered | Species or species habitat known to occur within area | In feature area |
| Chelonia mydas<br>Green Turtle [1765] | Vulnerable | Species or species habitat known to occur within area | In feature area |
| Dermochelys coriacea<br>Leatherback Turtle, Leathery Turtle, Luth [1768] | Endangered | Species or species habitat known to occur within area | In feature area |
| Eretmochelys imbricata<br>Hawksbill Turtle [1766] | Vulnerable | Species or species habitat known to occur within area | In feature area |
| Eubalaena australis as Balaena glacialis australis<br>Southern Right Whale [40] | Endangered | Species or species habitat likely to occur within area | In buffer area only |

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| [Lamna nasus](#)<br>Porbeagle, Mackerel Shark [83288] | | Species or species habitat may occur within area | In feature area |
| [Megaptera novaeangliae](#)<br>Humpback Whale [38] | | Species or species habitat known to occur within area | In buffer area only |
| [Mobula alfredi as Manta alfredi](#)<br>Reef Manta Ray, Coastal Manta Ray [90033] | | Species or species habitat may occur within area | In feature area |
| [Mobula birostris as Manta birostris](#)<br>Giant Manta Ray [90034] | | Species or species habitat may occur within area | In feature area |
| [Natator depressus](#)<br>Flatback Turtle [59257] | Vulnerable | Breeding likely to occur within area | In feature area |
| [Orcinus orca](#)<br>Killer Whale, Orca [46] | | Species or species habitat may occur within area | In buffer area only |
| [Rhincodon typus](#)<br>Whale Shark [66680] | Vulnerable | Species or species habitat may occur within area | In buffer area only |
| [Sousa sahulensis as Sousa chinensis](#)<br>Australian Humpback Dolphin [87942] | | Species or species habitat may occur within area | In buffer area only |
| Migratory Terrestrial Species | | | |
| [Cuculus optatus](#)<br>Oriental Cuckoo, Horsfield's Cuckoo [86651] | | Species or species habitat known to occur within area | In feature area |
| [Hirundapus caudacutus](#)<br>White-throated Needletail [682] | Vulnerable | Species or species habitat known to occur within area | In feature area |
| [Monarcha melanopsis](#)<br>Black-faced Monarch [609] | | Species or species habitat known to occur within area | In feature area |

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| [Myiagra cyanoleuca](#)<br>Satin Flycatcher [612] | | Species or species habitat known to occur within area | In feature area |
| [Rhipidura rufifrons](#)<br>Rufous Fantail [592] | | Species or species habitat known to occur within area | In feature area |
| [Symposiachrus trivirgatus as Monarcha trivirgatus](#)<br>Spectacled Monarch [83946] | | Species or species habitat known to occur within area | In feature area |
| **Migratory Wetlands Species** | | | |
| [Actitis hypoleucos](#)<br>Common Sandpiper [59309] | | Species or species habitat may occur within area | In feature area |
| [Calidris acuminata](#)<br>Sharp-tailed Sandpiper [874] | | Foraging, feeding or related behaviour known to occur within area | In feature area |
| [Calidris canutus](#)<br>Red Knot, Knot [855] | Endangered | Species or species habitat known to occur within area | In feature area |
| [Calidris ferruginea](#)<br>Curlew Sandpiper [856] | Critically Endangered | Species or species habitat may occur within area | In feature area |
| [Calidris melanotos](#)<br>Pectoral Sandpiper [858] | | Species or species habitat may occur within area | In feature area |
| [Calidris ruficollis](#)<br>Red-necked Stint [860] | | Foraging, feeding or related behaviour known to occur within area | In buffer area only |
| [Charadrius bicinctus](#)<br>Double-banded Plover [895] | | Foraging, feeding or related behaviour known to occur within area | In buffer area only |

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| Charadrius leschenaultii<br>Greater Sand Plover, Large Sand Plover [877] | Vulnerable | Species or species habitat known to occur within area | In feature area |
| Gallinago hardwickii<br>Latham's Snipe, Japanese Snipe [863] | | Species or species habitat known to occur within area | In feature area |
| Gallinago megala<br>Swinhoe's Snipe [864] | | Foraging, feeding or related behaviour likely to occur within area | In buffer area only |
| Gallinago stenura<br>Pin-tailed Snipe [841] | | Foraging, feeding or related behaviour likely to occur within area | In buffer area only |
| Limosa lapponica<br>Bar-tailed Godwit [844] | | Species or species habitat known to occur within area | In buffer area only |
| Numenius madagascariensis<br>Eastern Curlew, Far Eastern Curlew [847] | Critically Endangered | Species or species habitat known to occur within area | In feature area |
| Numenius minutus<br>Little Curlew, Little Whimbrel [848] | | Foraging, feeding or related behaviour likely to occur within area | In buffer area only |
| Numenius phaeopus<br>Whimbrel [849] | | Foraging, feeding or related behaviour known to occur within area | In buffer area only |
| Pandion haliaetus<br>Osprey [952] | | Breeding known to occur within area | In feature area |
| Pluvialis fulva<br>Pacific Golden Plover [25545] | | Foraging, feeding or related behaviour known to occur within area | In buffer area only |

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| Tringa nebularia | | | |
| Common Greenshank, Greenshank [832] | | Species or species habitat known to occur within area | In feature area |
| Tringa stagnatilis | | | |
| Marsh Sandpiper, Little Greenshank [833] | | Foraging, feeding or related behaviour known to occur within area | In buffer area only |

## Other Matters Protected by the EPBC Act

### Commonwealth Lands [ Resource Information ]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

| Commonwealth Land Name | State | Buffer Status |
|---|---|---|
| Communications, Information Technology and the Arts - Australian Postal Corporation | | |
| Commonwealth Land - Australian Postal Commission [11360] | NSW | In buffer area only |
| Commonwealth Land - Australian Postal Corporation [11650] | NSW | In feature area |
| Communications, Information Technology and the Arts - Telstra Corporation Limited | | |
| Commonwealth Land - Australian Telecommunications Commission [11649] | NSW | In feature area |
| Commonwealth Land - Australian Telecommunications Commission [11662] | NSW | In buffer area only |
| Commonwealth Land - Australian Telecommunications Commission [11651] | NSW | In buffer area only |
| Commonwealth Land - Australian Telecommunications Commission [11648] | NSW | In buffer area only |
| Commonwealth Land - Telstra Corporation Limited [12917] | NSW | In buffer area only |
| Commonwealth Land - Telstra Corporation Limited [12631] | NSW | In buffer area only |
| Defence | | |
| Commonwealth Land - Defence Service Homes Corporation [11359] | NSW | In buffer area only |

### Commonwealth Heritage Places [ Resource Information ]

| Name | State | Status | Buffer Status |
|---|---|---|---|
| Historic | | | |
| Macksville Post Office | NSW | Listed place | In feature area |

### Listed Marine Species [ Resource Information ]

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| Bird | | | |

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| Actitis hypoleucos<br>Common Sandpiper [59309] | | Species or species habitat may occur within area | In feature area |
| Anous stolidus<br>Common Noddy [825] | | Species or species habitat likely to occur within area | In feature area |
| Apus pacificus<br>Fork-tailed Swift [678] | | Species or species habitat likely to occur within area overfly marine area | In feature area |
| Ardenna carneipes as Puffinus carneipes<br>Flesh-footed Shearwater, Fleshy-footed Shearwater [82404] | | Species or species habitat likely to occur within area | In buffer area only |
| Ardenna grisea as Puffinus griseus<br>Sooty Shearwater [82651] | | Species or species habitat likely to occur within area | In feature area |
| Bubulcus ibis as Ardea ibis<br>Cattle Egret [66521] | | Breeding likely to occur within area overfly marine area | In feature area |
| Calidris acuminata<br>Sharp-tailed Sandpiper [874] | | Foraging, feeding or related behaviour known to occur within area | In feature area |
| Calidris canutus<br>Red Knot, Knot [855] | Endangered | Species or species habitat known to occur within area overfly marine area | In feature area |
| Calidris ferruginea<br>Curlew Sandpiper [856] | Critically Endangered | Species or species habitat may occur within area overfly marine area | In feature area |
| Calidris melanotos<br>Pectoral Sandpiper [858] | | Species or species habitat may occur within area overfly marine area | In feature area |

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| Calidris ruficollis<br>Red-necked Stint [860] | | Foraging, feeding or related behaviour known to occur within area overfly marine area | In buffer area only |
| Calonectris leucomelas<br>Streaked Shearwater [1077] | | Species or species habitat may occur within area | In feature area |
| Charadrius bicinctus<br>Double-banded Plover [895] | | Foraging, feeding or related behaviour known to occur within area overfly marine area | In buffer area only |
| Charadrius leschenaultii<br>Greater Sand Plover, Large Sand Plover [877] | Vulnerable | Species or species habitat known to occur within area | In feature area |
| Charadrius ruficapillus<br>Red-capped Plover [881] | | Foraging, feeding or related behaviour known to occur within area overfly marine area | In buffer area only |
| Diomedea antipodensis<br>Antipodean Albatross [64458] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area | In feature area |
| Diomedea antipodensis gibsoni as Diomedea gibsoni<br>Gibson's Albatross [82270] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area | In feature area |
| Diomedea epomophora<br>Southern Royal Albatross [89221] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area | In feature area |
| Diomedea exulans<br>Wandering Albatross [89223] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area | In feature area |

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| Fregata ariel<br>Lesser Frigatebird, Least Frigatebird [1012] | | Species or species habitat likely to occur within area | In feature area |
| Fregata minor<br>Great Frigatebird, Greater Frigatebird [1013] | | Species or species habitat likely to occur within area | In feature area |
| Gallinago hardwickii<br>Latham's Snipe, Japanese Snipe [863] | | Species or species habitat known to occur within area overfly marine area | In feature area |
| Gallinago megala<br>Swinhoe's Snipe [864] | | Foraging, feeding or related behaviour likely to occur within area overfly marine area | In buffer area only |
| Gallinago stenura<br>Pin-tailed Snipe [841] | | Foraging, feeding or related behaviour likely to occur within area overfly marine area | In buffer area only |
| Haliaeetus leucogaster<br>White-bellied Sea-Eagle [943] | | Species or species habitat known to occur within area | In feature area |
| Himantopus himantopus<br>Pied Stilt, Black-winged Stilt [870] | | Foraging, feeding or related behaviour known to occur within area overfly marine area | In buffer area only |
| Hirundapus caudacutus<br>White-throated Needletail [682] | Vulnerable | Species or species habitat known to occur within area overfly marine area | In feature area |
| Lathamus discolor<br>Swift Parrot [744] | Critically Endangered | Species or species habitat known to occur within area overfly marine area | In feature area |

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| Limosa lapponica<br>Bar-tailed Godwit [844] | | Species or species habitat known to occur within area | In buffer area only |
| Macronectes giganteus<br>Southern Giant-Petrel, Southern Giant Petrel [1060] | Endangered | Species or species habitat may occur within area | In feature area |
| Macronectes halli<br>Northern Giant Petrel [1061] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area | In feature area |
| Merops ornatus<br>Rainbow Bee-eater [670] | | Species or species habitat may occur within area overfly marine area | In feature area |
| Monarcha melanopsis<br>Black-faced Monarch [609] | | Species or species habitat known to occur within area overfly marine area | In feature area |
| Myiagra cyanoleuca<br>Satin Flycatcher [612] | | Species or species habitat known to occur within area overfly marine area | In feature area |
| Neophema chrysostoma<br>Blue-winged Parrot [726] | Vulnerable | Species or species habitat may occur within area overfly marine area | In feature area |
| Numenius madagascariensis<br>Eastern Curlew, Far Eastern Curlew [847] | Critically Endangered | Species or species habitat known to occur within area | In feature area |
| Numenius minutus<br>Little Curlew, Little Whimbrel [848] | | Foraging, feeding or related behaviour likely to occur within area overfly marine area | In buffer area only |
| Numenius phaeopus<br>Whimbrel [849] | | Foraging, feeding or related behaviour known to occur within area | In buffer area only |

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| Pachyptila turtur<br>Fairy Prion [1066] | | Species or species habitat likely to occur within area | In feature area |
| Pandion haliaetus<br>Osprey [952] | | Breeding known to occur within area | In feature area |
| Phaethon lepturus<br>White-tailed Tropicbird [1014] | | Species or species habitat known to occur within area | In feature area |
| Phoebetria fusca<br>Sooty Albatross [1075] | Vulnerable | Species or species habitat may occur within area | In buffer area only |
| Pluvialis fulva<br>Pacific Golden Plover [25545] | | Foraging, feeding or related behaviour known to occur within area | In buffer area only |
| Rhipidura rufifrons<br>Rufous Fantail [592] | | Species or species habitat known to occur within area overfly marine area | In feature area |
| Rostratula australis as Rostratula benghalensis (sensu lato)<br>Australian Painted Snipe [77037] | Endangered | Species or species habitat likely to occur within area overfly marine area | In feature area |
| Stercorarius skua as Catharacta skua<br>Great Skua [823] | | Species or species habitat may occur within area | In buffer area only |
| Sternula albifrons as Sterna albifrons<br>Little Tern [82849] | | Breeding known to occur within area | In buffer area only |
| Symposiachrus trivirgatus as Monarcha trivirgatus<br>Spectacled Monarch [83946] | | Species or species habitat known to occur within area overfly marine area | In feature area |
| Thalassarche bulleri<br>Buller's Albatross, Pacific Albatross [64460] | Vulnerable | Species or species habitat may occur within area | In feature area |

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| Thalassarche bulleri platei as Thalassarche sp. nov. | | | |
| Northern Buller's Albatross, Pacific Albatross [82273] | Vulnerable | Species or species habitat may occur within area | In feature area |
| Thalassarche carteri | | | |
| Indian Yellow-nosed Albatross [64464] | Vulnerable | Species or species habitat likely to occur within area | In buffer area only |
| Thalassarche cauta | | | |
| Shy Albatross [89224] | Endangered | Species or species habitat may occur within area | In feature area |
| Thalassarche impavida | | | |
| Campbell Albatross, Campbell Black-browed Albatross [64459] | Vulnerable | Species or species habitat may occur within area | In feature area |
| Thalassarche melanophris | | | |
| Black-browed Albatross [66472] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area | In feature area |
| Thalassarche salvini | | | |
| Salvin's Albatross [64463] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area | In feature area |
| Thalassarche steadi | | | |
| White-capped Albatross [64462] | Vulnerable | Species or species habitat may occur within area | In feature area |
| Tringa nebularia | | | |
| Common Greenshank, Greenshank [832] | | Species or species habitat known to occur within area overfly marine area | In feature area |
| Tringa stagnatilis | | | |
| Marsh Sandpiper, Little Greenshank [833] | | Foraging, feeding or related behaviour known to occur within area overfly marine area | In buffer area only |
| Fish | | | |
| Acentronura tentaculata | | | |
| Shortpouch Pygmy Pipehorse [66187] | | Species or species habitat may occur within area | In buffer area only |

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| Festucalex cinctus<br>Girdled Pipefish [66214] | | Species or species habitat may occur within area | In buffer area only |
| Filicampus tigris<br>Tiger Pipefish [66217] | | Species or species habitat may occur within area | In buffer area only |
| Heraldia nocturna<br>Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227] | | Species or species habitat may occur within area | In buffer area only |
| Hippichthys heptagonus<br>Madura Pipefish, Reticulated Freshwater Pipefish [66229] | | Species or species habitat may occur within area | In buffer area only |
| Hippichthys penicillus<br>Beady Pipefish, Steep-nosed Pipefish [66231] | | Species or species habitat may occur within area | In buffer area only |
| Hippocampus whitei<br>White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240] | Endangered | Species or species habitat likely to occur within area | In buffer area only |
| Histiogamphelus briggsii<br>Crested Pipefish, Briggs' Crested Pipefish, Briggs' Pipefish [66242] | | Species or species habitat may occur within area | In buffer area only |
| Lissocampus runa<br>Javelin Pipefish [66251] | | Species or species habitat may occur within area | In buffer area only |
| Maroubra perserrata<br>Sawtooth Pipefish [66252] | | Species or species habitat may occur within area | In buffer area only |
| Solegnathus dunckeri<br>Duncker's Pipehorse [66271] | | Species or species habitat may occur within area | In buffer area only |
| Solegnathus spinosissimus<br>Spiny Pipehorse, Australian Spiny Pipehorse [66275] | | Species or species habitat may occur within area | In buffer area only |

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| Solenostomus cyanopterus<br>Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183] | | Species or species habitat may occur within area | In buffer area only |
| Solenostomus paradoxus<br>Ornate Ghostpipefish, Harlequin Ghost Pipefish, Ornate Ghost Pipefish [66184] | | Species or species habitat may occur within area | In buffer area only |
| Stigmatopora nigra<br>Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277] | | Species or species habitat may occur within area | In buffer area only |
| Syngnathoides biaculeatus<br>Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279] | | Species or species habitat may occur within area | In buffer area only |
| Trachyrhamphus bicoarctatus<br>Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280] | | Species or species habitat may occur within area | In buffer area only |
| Urocampus carinirostris<br>Hairy Pipefish [66282] | | Species or species habitat may occur within area | In buffer area only |
| Vanacampus margaritifer<br>Mother-of-pearl Pipefish [66283] | | Species or species habitat may occur within area | In buffer area only |
| Reptile | | | |
| Caretta caretta<br>Loggerhead Turtle [1763] | Endangered | Species or species habitat known to occur within area | In feature area |
| Chelonia mydas<br>Green Turtle [1765] | Vulnerable | Species or species habitat known to occur within area | In feature area |
| Dermochelys coriacea<br>Leatherback Turtle, Leathery Turtle, Luth [1768] | Endangered | Species or species habitat known to occur within area | In feature area |
| Eretmochelys imbricata<br>Hawksbill Turtle [1766] | Vulnerable | Species or species habitat known to occur within area | In feature area |

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| Hydrophis elegans<br>Elegant Seasnake [1104] | | Species or species habitat may occur within area | In buffer area only |
| Natator depressus<br>Flatback Turtle [59257] | Vulnerable | Breeding likely to occur within area | In feature area |
| Pelamis platurus<br>Yellow-bellied Seasnake [1091] | | Species or species habitat may occur within area | In buffer area only |

| Whales and Other Cetaceans | | | [ Resource Information ] |
|---|---|---|---|
| Current Scientific Name | Status | Type of Presence | Buffer Status |
| Mammal | | | |
| Balaenoptera acutorostrata<br>Minke Whale [33] | | Species or species habitat may occur within area | In buffer area only |
| Balaenoptera edeni<br>Bryde's Whale [35] | | Species or species habitat may occur within area | In buffer area only |
| Balaenoptera musculus<br>Blue Whale [36] | Endangered | Species or species habitat may occur within area | In buffer area only |
| Delphinus delphis<br>Common Dolphin, Short-beaked Common Dolphin [60] | | Species or species habitat may occur within area | In buffer area only |
| Eubalaena australis<br>Southern Right Whale [40] | Endangered | Species or species habitat likely to occur within area | In buffer area only |
| Grampus griseus<br>Risso's Dolphin, Grampus [64] | | Species or species habitat may occur within area | In buffer area only |
| Megaptera novaeangliae<br>Humpback Whale [38] | | Species or species habitat known to occur within area | In buffer area only |
| Orcinus orca<br>Killer Whale, Orca [46] | | Species or species habitat may occur within area | In buffer area only |

| Current Scientific Name | Status | Type of Presence | Buffer Status |
|---|---|---|---|
| Sousa sahulensis as Sousa chinensis<br>Australian Humpback Dolphin [87942] | | Species or species habitat may occur within area | In buffer area only |
| Stenella attenuata<br>Spotted Dolphin, Pantropical Spotted Dolphin [51] | | Species or species habitat may occur within area | In buffer area only |
| Tursiops aduncus<br>Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418] | | Species or species habitat likely to occur within area | In buffer area only |
| Tursiops truncatus s. str.<br>Bottlenose Dolphin [68417] | | Species or species habitat may occur within area | In buffer area only |

## Extra Information

### State and Territory Reserves [ Resource Information ]

| Protected Area Name | Reserve Type | State | Buffer Status |
|---|---|---|---|
| Bollanolla | Nature Reserve | NSW | In buffer area only |
| Gaagal Wanggaan (South Beach) | National Park | NSW | In buffer area only |
| Gumma | Indigenous Protected Area | NSW | In buffer area only |
| Yarriabini | National Park | NSW | In buffer area only |

### Regional Forest Agreements [ Resource Information ]

Note that all areas with completed RFAs have been included.

| RFA Name | State | Buffer Status |
|---|---|---|
| North East NSW RFA | New South Wales | In feature area |

### Nationally Important Wetlands [ Resource Information ]

| Wetland Name | State | Buffer Status |
|---|---|---|
| 100 Acre Swamp | NSW | In buffer area only |

### EPBC Act Referrals [ Resource Information ]

| Title of referral | Reference | Referral Outcome | Assessment Status | Buffer Status |
|---|---|---|---|---|
| Controlled action | | | | |
| Nambucca Heads to Urunga Pacific Highway Upgrade, NSW | 2013/6963 | Controlled Action | Post-Approval | In buffer area only |
| Pacific Highway Upgrade, Warrel Creek to Nambucca Heads, NSW | 2013/7101 | Controlled Action | Post-Approval | In buffer area only |

| Title of referral | Reference | Referral Outcome | Assessment Status | Buffer Status |
|---|---|---|---|---|
| Not controlled action | | | | |
| Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia | 2015/7522 | Not Controlled Action | Completed | In feature area |
| Weed Species Removal at Lions Park, Bowraville | 2010/5493 | Not Controlled Action | Completed | In buffer area only |
| Referral decision | | | | |
| Breeding program for Grey Nurse Sharks | 2007/3245 | Referral Decision | Completed | In buffer area only |

## Biologically Important Areas

| Scientific Name | Behaviour | Presence | Buffer Status |
|---|---|---|---|
| Dolphins | | | |
| Tursiops aduncus | | | |
| Indo-Pacific/Spotted Bottlenose Dolphin [68418] | Breeding | Likely to occur | In buffer area only |
| Sharks | | | |
| Carcharias taurus | | | |
| Grey Nurse Shark [64469] | Foraging | Known to occur | In buffer area only |
| Whales | | | |
| Megaptera novaeangliae | | | |
| Humpback Whale [38] | Foraging | Known to occur | In buffer area only |

# Caveat

## 1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

## 2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

## 3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

## 4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

# Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.



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# Appendix D – Traffic and transport assessment

# Appendix E – Noise and vibration assessment

# Appendix F – Aboriginal heritage assessment

04 April 2023

**Project Manager** William Mahar
**Organisational Unit** Project/Contract Management 3
**Department** Regional and Outer Metropolitan
**Agency** Transport For NSW

Dear William,

**Preliminary assessment results for "B1873 Macksville Bridge Rehabilitation" based on Stage 1 of the *Procedure for Aboriginal Cultural Heritage Consultation and Investigation* (the procedure).**

The project, as described in the Stage 1 assessment, was assessed as being unlikely to have an impact on Aboriginal cultural heritage.

The assessment is based on the following due diligence considerations:

- The project is unlikely to harm known Aboriginal objects or places.
- The AHIMS search did not indicate moderate to high concentrations of Aboriginal objects or places in the study area.
- The study area does not contain landscape features that indicate the presence of Aboriginal objects, based on the Heritage NSW's ***Due diligence Code of Practice for the Protection of Aboriginal objects in NSW*** and the Transport for NSW's procedure.
- The cultural heritage potential of the study area appears to be reduced due to past disturbance.
- There is an absence of sandstone rock outcrops likely to contain Aboriginal art.

Your project may proceed in accordance with the environmental impact assessment process, as relevant, and all other relevant approvals.

If the scope of your project changes, you must contact me and your regional environmental staff to reassess any potential impacts on Aboriginal cultural heritage.

If any potential Aboriginal objects (including skeletal remains) are discovered during the project, all works in the vicinity of the find must cease. Follow the steps outlined in the Transport for NSW's ***Unexpected Archaeological Finds Procedure*.**

For further assistance in this matter do not hesitate to contact me.

Yours sincerely,

Malcolm Saunderson
Aboriginal Cultural Heritage Officer – Region North.

**Transport for NSW**
76 Victoria Street, Grafton NSW 2460.
**M** 0474 568 903 | **E** Malcolm.Saunderson.@transport.nsw.gov.au

# AHIMS Web Services (AWS)
## Search Result

Your Ref/PO Number : 12608031 AHIMS

Client Service ID : 777229

GHD

Date: 28 April 2023

Level 3 24 Honeysuckle Drive
Newcastle New South Wales 2300

Attention: Michelle Eckersley

Email: michelle.eckersley@ghd.com

Dear Sir or Madam:

**AHIMS Web Service search for the following area at Lat, Long From : -30.7106, 152.9151 - Lat, Long To : -30.7014, 152.9305, conducted by Michelle Eckersley on 28 April 2023.**

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


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

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

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

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

**Important information about your AHIMS search**

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

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

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

# Appendix G – Statement of heritage impact

# Appendix H – Socio-economic assessment

# Appendix I – T&I SEPP Consultation

**Department of Primary Industries (Fisheries)**
Department of Regional NSW

OUR REF: C24/63

20 February 2024

William Mahar
Transport for NSW

C/- Simon Murphy
Technical Director – Environment
GHD
Level 3, GHD Tower, 24 Honeysuckle Drive,
Newcastle NSW 2300
Via email: simon.murphy@ghd.com

Attention: Mr William Mahar

Dear Mr Mahar

**Re: s199 Consultation #C24/63 for dredging and reclamation work associated with strengthening works on the Macksville Bridge in the Nambucca River, adj Lot 7008 DP 92608, Macksville, Nambucca Valley Council LGA.**

Reference is made to Transport for NSW's proposal to undertake dredging and reclamation works associated with the above-mentioned project forwarded to DPI Fisheries on 2 February 2024.

DPI Fisheries, a division within the Department of Primary Industries, assesses applications for dredging and reclamation works, harm marine vegetation, and obstruction of fish passage in accordance with Part 7 of the *Fisheries Management Act 1994* (FM Act) and the *Policy and Guidelines for Fish Habitat Conservation and Management (2013 Update)* (DPI Fisheries P&G).

Section 199 of the FM Act (refer to Attachment 1) is applicable to this proposal because it pertains to dredging and reclamation works to be undertaken by a public authority. Section 199 requires the proposal to be referred to the Minister for Agriculture and that the public authority considers any matters concerning the proposed works raised by the Minister.

DPI Fisheries has reviewed the subject project and associated mitigation measures outlined in the application. It is understood that the proposal will involve excavation of materials from around the existing bridge piers and encasement of these piers with concrete 'jackets' (refer to Attachment 3).

DPI Fisheries has no objection to the proposed works. In accordance with Section 199 (1)(b) of the FM Act, the matters raised within Attachment 2 of this notice must be considered. These matters are to ensure that impacts to key fish habitats will be avoided or minimised to a level consistent with the requirements of DPI Fisheries P&G and relate to the Department's responsibilities for ensuring fish stocks are conserved and that there is "no net loss" of key fish habitats upon which they depend. The protection of key fish habitats provides for viable commercial fishing and aquaculture, quality recreational fishing and the continuation of Aboriginal cultural fishing within NSW. Should Transport for NSW choose not to consider these matters, Transport for NSW should contact DPI Fisheries prior to authorising the works.

If you have any queries, please contact me on 0499 689 583 or fletcher.mingramm@dpi.nsw.gov.au.

Yours sincerely

Fletcher Mingramm
**Fisheries Manager, Coastal Systems (North Coast)**
**Marine Estate Management, Primary Industries NSW**

Cc: fisheries.compliance@dpi.nsw.gov.au

# Attachment 1

*Fisheries Management Act 1994* No 38

Part 7 Division 3 Section 199

199 Circumstances in which a public authority (other than local authority) may carry out dredging or reclamation

(1) A public authority (other than a local government authority) must, before it carries out or authorises the carrying out of dredging or reclamation work:

(a) give the Minister written notice of the proposed work, and

(b) consider any matters concerning the proposed work that are raised by the Minister within 21 days after the giving of the notice (or such other period as is agreed between the Minister and the public authority).

(2) Any such public authority is to notify the Minister of any dredging or reclamation work that it proposes to carry out or authorise despite any matter raised by the Minister. The Minister may, within 14 days after being so notified, refer any dispute to the Minister responsible for the public authority. If the dispute cannot be resolved by those Ministers, it is to be referred to the Premier for resolution.

(3) In this section, public authority includes the Minister administering the *Crown Land Management Act 2016*.

# Attachment 2

MATTERS FOR CONSIDERATION UNDER s199 of the *Fisheries Management Act 1994*

Administration

1. DPI Fisheries recommend that a copy of relevant approval documentation be carried by the proponent or their contractor operating on-site.
*Reason – A DPI Fisheries Compliance Officer may wish to check that the works are being undertaken in accordance with relevant approvals.*

2. The subject works, including the construction methodology and final built design, should be consistent with the proposal outlined in the s199 referral to DPI Fisheries by Transport for NSW on 2 February 2024. Any proposed changes to the methodology or final design should be discussed with DPI Fisheries prior to implementation.
*Reason – This s199 consultation has been prepared following an assessment of the potential impacts of the described works on the aquatic and neighbouring environments. Other works, which were not described in the referral have not been assessed and may have significant adverse impacts.*

Erosion and sediment control

3. Sediment entering waterways can directly impact key fish habitats. DPI Fisheries recommends that Transport for NSW ensures that:
- Erosion and sediment mitigation devices are erected and managed in accordance with all applicable requirements of the Blue Book (i.e. Landcom [2004], *Managing Urban Stormwater: Soils and Construction* [4th Edition]) (https://www.environment.nsw.gov.au/research-and-publications/managing-urban-stormwater-soils-and-construction-volume-1-4th-editon); and
- Where there is sufficient water depth (> 0.5m), a floating boom and attached silt curtain are used and maintained to isolate the work site and minimise the impacts of turbidity and mobilised sediment during the construction; and
- Stockpiles are located away from adjacent on water land[1], marine vegetation[2] (saltmarsh, mangrove, and seagrass) and riparian and aquatic vegetation[3].
*Reason – To ensure that sediment generated by the exposure of soil is not transported into the aquatic environment.*

[1] "Water land" means land submerged by water:

a) whether permanently or intermittently, or
b) whether forming an artificial or natural body of water,

and includes *wetlands* and any other land prescribed by the regulations.

*Wetlands* include marshes, mangroves, swamps, or other areas that form a shallow body of water when inundated intermittently or permanently with fresh, brackish, or salt water, and where the inundation determines the type and productivity of the soils and the plant and animal communities.

[2] "Marine vegetation" means any species of plant that at any time in its life must inhabit water (other than fresh water).

[3] "Aquatic vegetation" is a term used to describe native vegetation that inhabits freshwater but does not include noxious weeds within the meaning of the *Noxious Weeds Act* 1993.

Acid sulfate soil management

4. The site has potential for acid sulfate soils. DPI Fisheries recommends that Transport for NSW ensures that excavated soil is managed in accordance with the *Managing Acid Sulfate Soil (EPA, 1995), Acid Sulfate Soil Manual* (Acid Sulfate Soil Management Advisory Committee 1998) and consistent with best management practice outlined in *Restoring The Balance: Guidelines for Managing Floodgates and Drainage Systems on Coastal Floodplains* available at: http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0007/167875/restoring-balance-guidelines.pdf
*Reason – Avoid oxidisation, and or appropriately treating potential acid sulfate soils to minimise impacts on aquatic ecosystems.*

Timing of works for low flows/

5. Appropriately timing the works for periods of low flow can assist erosion and sediment control at the site. DPI Fisheries recommends that Transport for NSW ensures that works are undertaken during periods of low flows in the waterway and when the Bureau of Meteorology forecast for the Mid North Coast district forecast region (available at: www.bom.gov.au/nsw/forecasts/map.shtml) indicates several days of clear, dry weather.
*Reason – Timing the works for appropriate conditions can reduce delays and minimise impacts on the aquatic environments.*

Instream works

6. Instream works can impact key fish habitats. DPI Fisheries recommends that Transport for NSW ensures that:
- Machinery is restricted from entering or working from the waterway unless in accordance with best management practices and an agreed work method statement;
- Machinery is appropriately cleaned, degreased and serviced prior to use at the site and entry into the waterway; and
- Emergency Spill Kits appropriate for containing and cleaning up petroleum and solvent product spills within waterways be available on site at all times during works.
*Reason – To reduce the threat of an unintended pollution incident impacting upon the aquatic environment.*

7. Snags are important key fish habitats and DPI Fisheries prioritise leaving snags in-situ, realignment, relocation and, only when these opportunities are not possible, removal. DPI Fisheries recommends that Transport for NSW ensures that no snags[4] outside of the immediate works footprint are removed, and that such snags are only realigned or relocated if required.
*Reason – "Removal of large woody debris from NSW rivers and streams" is listed as a Key Threatening Process under the provisions of the FM Act. This approval has been granted on the basis that snags are not to be removed.*

[4] "Snags" is a term used to describe **large woody debris** from trees and shrubs, including whole fallen trees, broken branches and exposed roots that have fallen or washed into a waterway and are now wholly or partially submerged by water. Snags also includes submerged large rocks (of greater than 500 mm in two dimensions).

Avoiding harm to marine vegetation

8. Marine vegetation including seagrass, mangroves, saltmarsh, and kelp is not to be harmed or removed during the undertaking of works outlined in this s199 consultation. A separate authority under s205 of the *Fisheries Management Act* 1994 is required to harm marine vegetation.
*Reason – To ensure that impacts on aquatic habitats are appropriately managed and minimised.*

9. To protect marine, riparian, and aquatic vegetation, DPI Fisheries recommends that Transport for NSW ensures that marine, riparian, and aquatic vegetation on water land, outside of the works footprint, is identified and appropriately delineated as "No Go" areas (with the aim of avoiding harm to these areas).
*Reason – To ensure that impacts on aquatic habitats and the riparian zone are minimised.*

Post works rehabilitation of site

10. DPI Fisheries recommends that Transport for NSW ensures the site to be rehabilitated and stabilised at the completion of the works including:
- Removal of surplus construction materials and temporary structures from the site (other than silt fences and other erosion and sediment control devices).
*Reason – To ensure that habitats are restored as quickly as possible, public safety is not compromised, aesthetic values are not degraded and sediment inputs into the waterway are reduced.*

Fish kill contingency

11. DPI Fisheries maintains a fish kill database. To limit the potential of a fish kill incident, DPI Fisheries recommends that the proponent be advised to undertake a visual inspection of the waterway for dead or distressed fish (indicated by fish gasping at the water surface, fish crowding in pools or at the creek's banks) twice daily during the works. Observations of dead or distressed fish should be immediately reported to the Contact Officer by the approval holder. If a fish kill occurs, DPI Fisheries recommend works cease until the issue causing the kill is rectified.
*Reason – Fish kills are also potentially contentious incidents from the public perspective. DPI Fisheries needs to be aware of fish kills so that it can assess the cause and recommend ways to mitigate further incidents in consultation with relevant authorities. Work practices may need to be modified to reduce the impacts on the aquatic environment.*

## Attachment 3


Figure 1: Plan showing location of works.

31 Jan 2024

NSW Department of Primary Industries
Fisheries
Locked Bag 1, Nelson Bay NSW 2315
information-advisory@dpi.nsw.gov.au

To whom it concerns

**Consultation regarding proposed rehabilitation of the Macksville Bridge, Macksville**

Transport for NSW is proposing to undertake works for the Macksville Bridge Rehabilitation project.

The location of the proposal is show in Figure 1.1. A description of the proposed bridge rehabilitation activities, their staging and timing is provided in the attached table. The proposal would occur in, in and above the Nambucca River which is an identified 'Key Fish Habitat' under the Fisheries Management Act 1994 (FM Act). No blockage of fish passage would occur as a result of the works.

Proposed activities as part of the Stage 1 pier strengthening works may be considered, dredging works, as defined under section 198A of the FM Act, where river bed work is required to facilitate the installation of new reinforced concrete 'jackets' around existing piers down to their base. Built-up river bed material at the base of piers would require removal to allow this work. These works will be limited to the area immediately around the base of the bridge piers and not required across the width of the river.

Pursuant to section 199 of the FM Act a public authority (including Transport for NSW) is required to give the Minister written notice of the proposed work and consider matters received from the Minister.

Transport for NSW is providing notice of the work, which is not expected to be undertaken until early 2024, and is seeking advice from NSW Fisheries regarding matters to be considered in the Review of Environmental Factors (REF) for the project. It would be appreciated if you could provide any comments about this proposal within two weeks of receipt of this letter. We would also welcome the opportunity to brief NSW Fisheries on the project to help inform feedback.

**Transport for NSW**
34 Heber Street, Grafton 2460 NSW | PO Box 576, Grafton 2460 NSW
**P** XXXXXX | **W** roads-maritime.transport.nsw.gov.au | ABN 18 804 239 602

Transport for NSW would be pleased to provide further information if required. In this regard, William Mahar may be contacted on 0456 645 985 or by email at william.d.mahar@transport.nsw.gov.au.

Yours faithfully

Simon Murphy
BEnv Sc MSoc Sc (Env & Plan)
Technical Director – Environment
Level 3, GHD Tower, 24 Honeysuckle Drive, Newcastle NSW 2300
M +61 428 626 952
E simon.murphy@ghd.com


*Figure 1.1 Location of the proposal*

*Table 1-1: Work methodology*

| Proposed works |
|---|
| **Site establishment** |
| Site establishment works may include, but not be limited to, the following:<br>• Establishment of construction compound and temporary jetty<br>• Installation of scaffold as required<br>• Installation of environmental controls i.e. erosion and sediment control, traffic control etc.<br>• Installation of occupational health and safety controls for workers during blasting and painting<br>• Float equipment, machinery and materials to site<br>• Removal of Council installed bridge lighting (for later installation on completion of works) |
| **Stage 1 - Pier strengthening/ concrete durability** |
| Encasing Piers 4, 5 and 6 with concrete to restore structural capacity to these piers (both above and below the water) |
| Installation of a SACP System to all eight piers to protect the steel reinforcement |
| Undertake concrete patching on all piers to rectify damage |
| **Stage 2 - Steel rehabilitation** |
| Removal of the temporary support beam in Span 9/ Pier 8 and installation of a permanent solution. Installation of the same solution for Span 1/ Pier 1 |
| Steel repairs to all bridge spans to rehabilitate any section loss, cracking or in any area where strengthening is required. This includes welding, drilling, bolting on new plates and full member replacement where required. Corroded rivets and bolts will be replaced with structural bolts as required. |
| Servicing and maintenance of the bearings, including corrosion treatment |
| **Stage 4 - Bridge painting and updates** |
| Install scaffold with encapsulation in stages (one span at a time) to capture existing paint |
| Blast and repaint all nine spans including the walkway |
| Undertake minor steel repairs identified during the repainting process |
| General clean of bridge including bird droppings and scuppers |
| Installation of bird spikes at nesting locations |
| Maintenance of scour protection at abutments |
| Walkway maintenance including handrail replacement |
| Bridge guardrail / barrier replacement |
| **Stage 4 - Deck repairs** |
| Deck repairs and waterproofing to prevent rainwater ingress to below deck and rectify extensive cracking |
| Removal and replacement of failed bridge joints |
| Installation of a durability treatment to the entire concrete bridge deck |

| Proposed works |
| --- |
| **Site decommissioning** |
| Ensure all waste is removed from site. All waste would be disposed at appropriately licensed waste facilities, and hazardous waste, including paint waste would be removed from site by a licensed transporter and disposed of in accordance with the legislation to a licensed waste facility. All hazardous waste would be tracked |
| Remove scaffolding and containment |
| Remove site compounds |
| Rehabilitate sites including reinstalling Council lighting on the bridge |
| Remove traffic control signs and reopen bridge to traffic |

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31 Jan 2024

NSW Maritime
PO Box 576
Grafton NSW 2460
enquiries@transport.nsw.gov.au

To whom it concerns

**Consultation regarding proposed rehabilitation of the Macksville Bridge, Macksville**

Transport for NSW is proposing to undertake works for the Macksville Bridge Rehabilitation project.

Under State Environmental Planning Policy (Transport and Infrastructure) 2021 (SEPP (Transport and Infrastructure)), Transport for NSW is required to consult with NSW Maritime under clause 2.15 due to the potential impacts on navigable waters.

The location of the proposal is show in Figure 1.1. A description of the proposed bridge rehabilitation activities, their staging and timing is provided in the attached table. The works would require the partial closure of the waterway between bridge piers as works progress. No complete closure of the entire river is proposed. TfNSW would consult further with Maritime regarding the works program and specific requirements once proposed closure dates are identified.

It would be appreciated if you could provide any comments about this proposal within two weeks of receipt of this letter.

Transport for NSW would be pleased to provide further information if required. In this regard, William Mahar may be contacted on 0456 645 985 or by email at william.d.mahar@transport.nsw.gov.au.

Yours faithfully

Simon Murphy
BEnv Sc MSoc Sc (Env & Plan)
Technical Director – Environment
Level 3, GHD Tower, 24 Honeysuckle Drive, Newcastle NSW 2300
M +61 428 626 952
E simon.murphy@ghd.com


*Figure 1.1 Location of the proposal*

*Table 1-1: Work methodology*

| Proposed works |
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| **Site establishment** |
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| **Stage 1 - Pier strengthening/ concrete durability** |
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| Proposed works |
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| Remove scaffolding and containment |
| Remove site compounds |
| Rehabilitate sites including reinstalling Council lighting on the bridge |
| Remove traffic control signs and reopen bridge to traffic |

**Transport for NSW**
34 Heber Street, Grafton 2460 NSW | PO Box 576, Grafton 2460 NSW
**P** XXXXXX | **W** roads-maritime.transport.nsw.gov.au | ABN 18 804 239 602

31 Jan 2024

The General Manager
Nambucca Valley Council
PO Box 177
Macksville NSW 2447
council@nambucca.nsw.gov.au

Dear Sir

**Consultation regarding proposed rehabilitation of the Macksville Bridge, Macksville**

Transport for NSW is proposing to undertake works for the Macksville Bridge Rehabilitation project.

Under State Environmental Planning Policy (Transport and Infrastructure) 2021 (SEPP (Transport and Infrastructure)), Transport for NSW is required to consult with Council under clause 2.10 due to the potential impacts on council infrastructure due to traffic changes.

The location of the proposal is show in Figure 1.1 and further details of the project have previously been provided to Council by email on 19 January from William Mahar at Transport for NSW. The briefing pack that was attached to that email has also been attached to this letter for your information.

It would be appreciated if you could provide any comments about this proposal within two weeks of receipt of this letter.

Transport for NSW would be pleased to provide further information if required. In this regard, William Mahar may be contacted on 0456 645 985 or by email at william.d.mahar@transport.nsw.gov.au.

Yours faithfully

Simon Murphy
BEnv Sc MSoc Sc (Env & Plan)
Technical Director – Environment
Level 3, GHD Tower, 24 Honeysuckle Drive, Newcastle NSW 2300
M +61 428 626 952
E simon.murphy@ghd.com


*Figure 1.1 Location of the proposal*

**Transport for NSW**
34 Heber Street, Grafton 2460 NSW | PO Box 576, Grafton 2460 NSW
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NSW GOVERNMENT