

Briner Bridge upgrade

Submissions report

Roads and Maritime Services | May 2019



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Prepared by GeoLINK Consulting Pty Ltd and Roads and Maritime Services

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Approval and authorisation

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Executive summary

Purpose of this report

This submissions report summarises and responds to the issues raised through public consultation on the Review of Environmental Factors (REF) for the upgrade of Briner Bridge over the Coldstream River two kilometres north-west of Tucabia (the proposal) in the Clarence Valley Local Government Area. Briner Bridge is listed on the Roads and Maritime Services Section 170 Heritage Register and the State Heritage Inventory. The bridge will be nominated for listing on the State Heritage Register upon completion of the upgrade works.

The proposal

The bridge is currently load limited to 33 tonnes and requires regular ongoing maintenance. The upgrade will increase the capacity to 42.5 tonnes (T44 traffic loading) and reduce maintenance requirements while retaining the heritage significance of the truss span and vertical alignment (or geometry). In developing plans to upgrade the bridge, Roads and Maritime Services is working closely with the NSW Office of Environment and Heritage (OEH).

Key features of the proposal include:

- Increasing the width of the bridge deck to 5.4 metres between barriers to allow two cars to pass
- Restoration and strengthening of the Dare Truss span
- Restoration of the deck on the truss span with stress laminated timber
- Replacement of the timber approach spans with reinforced concrete and steel girder approach spans
- Replacement of the timber abutments with new reinforced concrete abutments
- Replacement of timber piles below ground with new driven piles
- Replacement of timber trestle piers with steel trestle piers
- Replacement of the timber handrail with a new steel traffic barrier
- Installation of a temporary bridge linked to Coldstream Terrace for public access during construction
- Establishing site facilities associated with the works.

A more detailed description of the proposal is found in the Briner Bridge upgrade REF.

REF public display

Roads and Maritime placed the REF on public exhibition from 5 November to 26 November 2018 and invited submissions relating to the project.

The REF was made available online and printed copies were displayed at three locations (Tucabia Village General Store, Roads and Maritime Services Regional Office and Clarence Valley Council offices).

The project team held a community drop-in session that involved a staffed display at the Tucabia Community Hall on 14 November from 12.00 pm to 2.00 pm and 4:00 pm to 7.00 pm.

Key issues raised in submissions on the REF

Roads and Maritime received four submissions in response to the REF during the exhibition. No submissions outright objected to the proposal. Submissions received were generally comments or queries in relation to the project. One submission raised concerns regarding high noise activities generated by the construction stage of the project.

The four submissions raised issues with the proposal that can be categorised into the following themes:

- Briner Bridge upgrade design
- Flooding impacts
- Noise and vibration impacts
- Temporary bridge.

Environmental management measures and responses

The REF for the Briner Bridge upgrade identified the framework for environmental management, including safeguards and management measures that would be adopted to avoid or reduce environmental impacts (Section 7 of the REF).

All issues raised including those from agencies have been addressed.

OEH (Heritage)

OEH (Heritage) noted that:

- A cautious approach has consistently been advised for the design of the proposed works to Briner Bridge so that the potential State heritage values are not compromised.
- The endorsed *Timber Truss Bridges: Overarching Conservation Management Plan* (2018) has been used to evaluate the proposed changes to the bridge, the proposed designs in the SOHI are consistent with the revised designs and the Heritage Division was given an opportunity to comment on the designs in September 2018.
- While consultation was undertaken on the proposed upgrade, at no time has the Heritage Division undertaken a full merit review of the proposed designs or provided endorsed stamped plans.
- As previously recommended, the final design of the traffic barrier should be referred to the RMS Heritage team to discuss any potential heritage impacts of the design before committing to a solution.

In response to concerns raised it is noted Roads and Maritime has consulted with the relevant teams internally through the development of the bridge design. The Roads and Maritime Services Heritage Division has expressed satisfaction with the design and has been closely involved in the development of the Statement of Heritage Impacts. Roads and Maritime Services will continue to work with OEH during the development of the Conservation Management Plan upon completion of the bridge upgrade, noting approval of the current design is not required on the condition that it meets the overarching Conservation Management Plan for Timber Bridges and the agreed design criteria for Briner Bridge.

NSW DPI (Fisheries)

NSW DPI (Fisheries) noted that:

- NSW DPI (Fisheries) has no objection to the proposed works. In accordance with Section 199 (1) (b) of the *Fisheries Management Act* (FM Act) a list of matters for consideration are provided (refer to **Attachment A**) which must be considered by Roads and Maritime. These considerations include:

- Administration requirements for site operation
- Erosion and sediment control
- Best practice dewatering and instream works
- Timing of works for low flows
- Armouring and other rock works to be adequately designed and managed
- Avoiding harming marine vegetation
- Post works rehabilitation
- Observation of fish health during the project life

These have been taken on by the project team and will be passed on to the delivery phase.

Three submissions raised queries in relation to the design of Briner Bridge, specifically the vertical alignment (arc), the width and the height of the bridge approaches. The arc in Briner Bridge is considered to be a significant heritage aspect of the bridge design and must be retained with the upgrade. Raising the road approaching the bridge is not achievable as the road level at the start and finish of the bridge must remain the same. Issues associated with site distance have been considered in the decision to widen the bridge to allow two cars to pass each other. Roads and Maritime has designed the proposal in accordance with relevant road design standards and 5.4 metres between barriers is sufficient to allow two cars to pass on the bridge.

One submission expressed concern regarding noise impacts associated with the proposal. Safeguards are provided in the REF to minimise impacts on sensitive receivers associated with the construction stage of the project. This includes providing appropriate contacts to adjacent residents during construction as per standard Roads and Maritime practice.

One submission sought to ensure the temporary bridge had a suitable load capacity to carry the local school bus. The load rating of the temporary bridge to be provided during construction will be the same as the load rating on the current bridge.

Finally one submission enquired about a local flooding matter that is unrelated to the project and was passed on to the local council.

Next steps

Roads and Maritime is the determining authority for the REF. Roads and Maritime will assess the proposal, including the submissions report and make a determination.

Roads and Maritime will continue to communicate with community members, government agencies and other stakeholders during the construction phase of the proposal.

Contents

| | |
|---|-----------|
| Executive summary | i |
| Purpose of this report | i |
| The proposal | i |
| REF public display | i |
| Key issues raised in submissions on the REF | ii |
| Environmental management measures | ii |
| Next steps | iii |
| 1. Introduction and background | 1 |
| 1.1 The proposal | 1 |
| 1.2 REF display | 4 |
| 1.3 Purpose of the report | 4 |
| 2. Response to issues | 5 |
| 2.1 Overview of issues raised | 5 |
| 2.2 Issue 1, Briner Bridge upgrade design | 5 |
| 2.3 Issue 2, flooding impacts | 6 |
| 2.4 Issue 4, noise and vibration impacts | 7 |
| 2.5 Issue 5, temporary bridge | 7 |
| 3. Additional Consultation with Agencies | 8 |
| 3.1 Agency Responses | 8 |
| 4. Environmental management | 10 |
| 4.1 Environmental management plans (or system) | 10 |
| 4.2 Summary of safeguards and management measures | 10 |
| 4.3 Licensing and approvals | 36 |
| 5. References | 37 |

Tables

Table 1-1: Display locations.....4

Table 2-1: Respondents5

Table 4-1: Summary of environmental safeguards and management measures..... 11

Appendices

| | |
|------------|-------------------------------|
| Appendix A | Agency Consultation Responses |
|------------|-------------------------------|

1. Introduction and background

1.1 The proposal

Roads and Maritime Services proposes to upgrade Briner Bridge over the Coldstream River two kilometres north-west of Tucabia (the proposal) in the Clarence Valley Local Government Area. Tucabia is located 16 kilometres north-east of Grafton on Coldstream Terrace. Roads and Maritime manage Briner Bridge as part of the ex-national bridges. The bridge is currently load limited to 33 tonnes and requires regular ongoing maintenance. The upgrade will increase the capacity to 42.5 tonnes (T44 traffic loading) and reduce maintenance requirements while retaining the heritage significance of the truss span and vertical alignment (or geometry). Briner Bridge is listed on the Roads and Maritime Services Section 170 Heritage Register, the State Heritage Inventory and will be nominated for listing on the State Heritage Register upon completion of the upgrade works. In developing plans to upgrade the bridge, Roads and Maritime Services is working closely with the NSW Office of Environment and Heritage (OEH).

Key features of the proposal include:

- Increasing the width of the bridge deck to 5.4 metres between barriers to allow two cars to pass
- Restoration and strengthening of the Dare Truss span
- Restoration of the deck on the truss span with stress laminated timber
- Replacement of the timber approach spans with reinforced concrete and steel girder approach spans
- Replacement of the timber abutments with new reinforced concrete abutments
- Replacement of timber piles below ground with new driven piles
- Replacement of timber trestle piers with steel trestle piers
- Replacement of the timber handrail with a new steel traffic barrier
- Installation of a temporary bridge linked to Coldstream Terrace for public access during construction
- Establishing site facilities associated with the works.

A temporary two span bridge will be built immediately upstream of Briner Bridge to enable traffic to cross Coldstream River during upgrade of the bridge. New approach roads will be built to tie in with Coldstream Terrace. The approach roads will have two lanes, and the bridge will have one lane. The intersection of Bowlings Road and Coldstream Terrace will be temporarily modified for the duration of the works to tie in to the temporary bridge approach roads. The temporary bridge will be removed, and the intersection restored upon completion of the works.

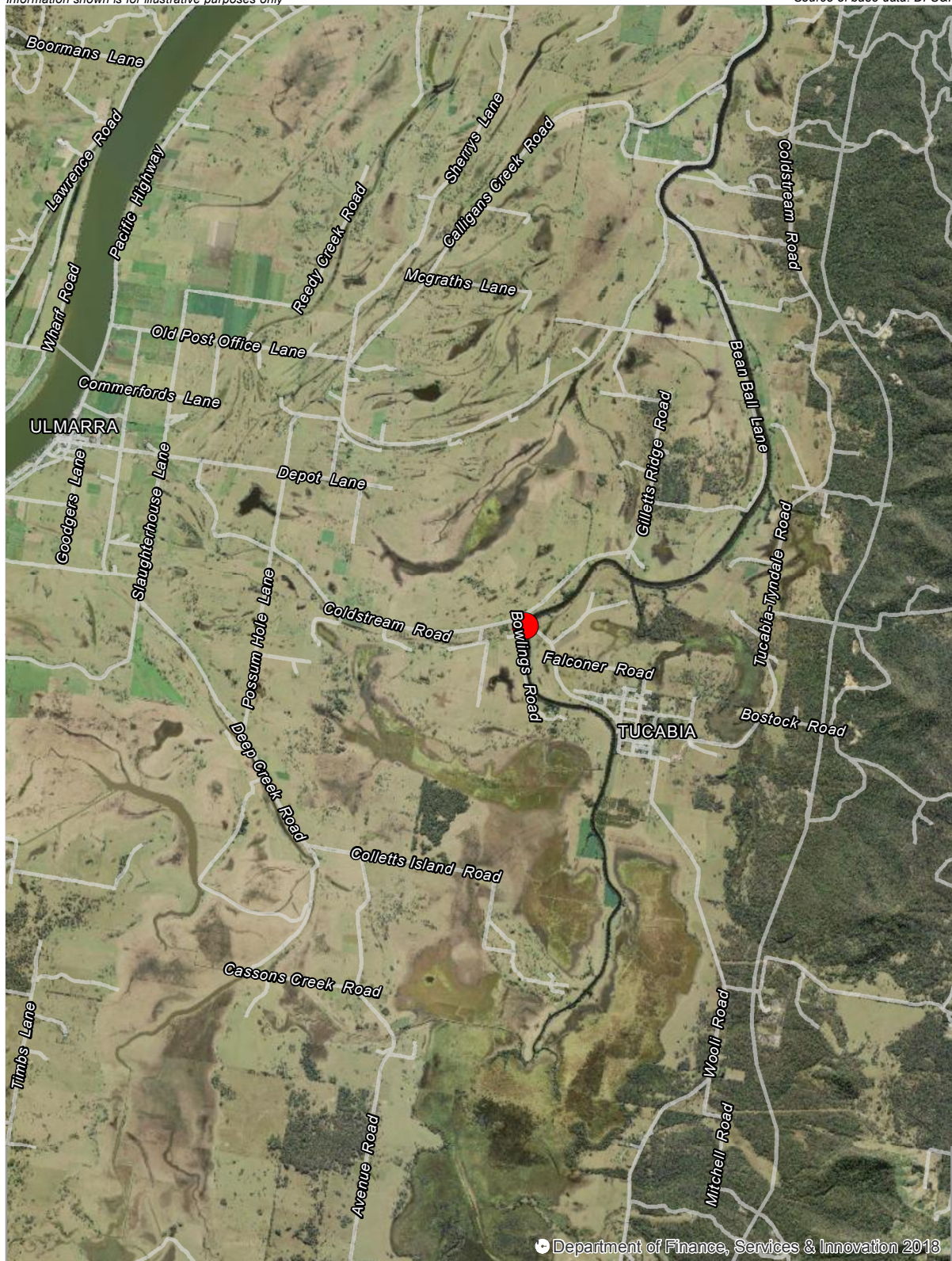
Traffic would have access across the temporary bridge for the majority of the works, however full closure would be required on occasion to allow a crane to work from the temporary bridge approach road to install elements to the river spans of the permanent bridge. Full closures will be scheduled to occur on weekends where possible to minimise impacts to road users. During these closures, traffic would be diverted via Tyndale or Glenugie to access the Pacific Highway, Ulmarra and Grafton.

Construction is expected to begin in early 2019, subject to funding, and will take about 14 months to complete, including installation and removal of the temporary bridge and rehabilitation of the proposal area.

A more detailed description of the project can be found in the Briner Bridge upgrade REF, October 2018.

The location of the proposal and its key features is shown in Figures 1.1 and 1.2.

Information shown is for illustrative purposes only



LEGEND

● Briner Bridge

0 1.5 km



GeoLINK
 environmental management and design

Briner Bridge Rehabilitation - Submissions Report
 2705-1078

Location of the Proposal

Figure 1.1



LEGEND

- Study area
- The site
- Cadastre
- Site compound and fabrication area
- Temporary bridge / access road
- Vegetation clearing
- Temporary construction site access
- Temporary jetty location

0 80



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Briner Bridge Rehabilitation - Submissions Report
2705-1077
Subject to Detailed Design

The Proposal

Figure 1.2

1.2 REF display

Roads and Maritime prepared an REF to assess the environmental impacts of the proposal. The REF was publicly displayed between 5 November and 26 November 2018. Copies of the report were available at three locations, as detailed in Table 1-1. The REF was also placed on the Roads and Maritime project website and made available for download.

The project team held a community drop-in session that involved a staffed display at the Tucabia Community Hall on 14 November from 12.00 pm to 2.00 pm and 4:00 pm to 7.00 pm.

Table 1-1: Display locations

| Location | Address |
|---|-----------------------------|
| Tucabia Village General Store | 12 Cordini Street, Tucabia |
| Roads and Maritime Services Regional Office | 76 Victoria Street, Grafton |
| Clarence Valley Council office | 2 Prince Street, Grafton |

As part of the REF process, Roads and Maritime has undertaken preliminary community consultation with various parties and key stakeholders to inform them of the proposal and gauge potential impacts and how they might be managed. This consultation started in 2016 and included a community update in September 2016, followed by community drop in sessions held on Monday, 10 October and Tuesday, 11 October 2016. Key messages were around bridge closures and the need to retain the key features of the bridge. Feedback forms were collected with the main concern from the community being the closure of the crossing during construction. In April 2017 a community update provided an overview of the project following consultation and advised that construction was not likely to take place until 2018. The project website has been updated with project news, documents and other relevant information. The outcomes of this consultation are discussed in the REF. Consultation with various parties and key stakeholders will be ongoing in the lead up to the start of works and throughout the duration of work.

1.3 Purpose of the report

This submissions report relates to the REF prepared for the Briner Bridge upgrade and should be read in conjunction with that document.

The REF was placed on public display and submissions relating to the proposal and the REF were received by Roads and Maritime. This submissions report summarises issues raised and provides responses (Chapter 2). The mitigation and management measures proposed within the REF do not need to be revised as a result of feedback received.

No other revisions have been made to the assessment in the REF since the project was placed on public exhibition.

2. Response to issues

Roads and Maritime received four submissions, accepted up until 26 November 2018. Table 2-1 lists the respondents and each respondent's allocated submission number. The table also indicates where the issues from each submission have been addressed in this report.

Submission writers (respondents) that wish to determine how their submission was categorised and their submission number can contact Roads and Maritime for these details.

Table 2-1: Respondents

| Respondent | Submission No. | Section number where issues are addressed |
|-------------------------|----------------|---|
| Individual | 01 | 2.2.1 |
| Individual | 02 | 2.3 |
| Individual | 03 | 2.2.2, 2.4 |
| Business - Attwal Buses | 04 | 2.5 |

2.1 Overview of issues raised

A total of four submissions were received in response to the display of the REF. These included three submissions from individuals and one submission from a business/ company.

Each submission has been examined individually to understand any issues being raised. The issues raised in each submission have been extracted and collated, and corresponding responses to the issues have been provided. The issues raised and Roads and Maritime response to these issues forms the basis of this chapter.

No submissions outright objected to the proposal. Submissions received were generally comments or queries in relation to the project. One submission raised concerns regarding noise activities generated by the construction stage of the project.

The four submissions raised issues with the proposal that can be categorised into the following themes:

- Briner Bridge upgrade design
- Flooding impacts
- Noise and vibration impacts
- Temporary bridge.

2.2 Issue 1, Briner Bridge upgrade design

Two submissions raised queries in relation to the design of the Briner Bridge upgrade (1 and 3).

2.2.1 Sub-issue 1.1, bridge approach height

Submission number(s)

One submissions raised a query in relation to the proposed bridge height (1).

Issue description

The submission queried whether the height of the bridge approach could be raised to provide better site distance over the bridge.

Response

Considerable work has been undertaken by Roads and Maritime to maintain the heritage character of Briner Bridge. The arc in the vertical alignment of Briner Bridge is considered to be a significant heritage aspect of the bridge design and must be retained with the upgrade. Raising the road approaching the bridge is not achievable as the road level at the start and finish of the bridge must remain the same. Issues associated with site distance have been considered in the decision to widen the bridge to allow two cars to pass each other.

2.2.2 Sub-issue 1.2, bridge width

Submission number(s)

One submission raised a query in relation to the proposed bridge width (3).

Issue description

The submission queried whether the proposal meets the standard two-lane width for roads.

Response

Roads and Maritime have designed the proposal in accordance with relevant road design standards. The Briner Bridge will provide 5.4 metres between barriers which is sufficient to allow two cars to pass each other. The decision to widen the bridge to 5.4m was seen as an acceptable compromise in maintaining the bridges heritage character whilst improving road safety for the surrounding community.

2.3 Issue 2, flooding impacts

Submission number(s)

One submission (2) noted flooding impacts on land adjacent to the proposal.

Issue description

The submission noted that localised flooding occurs on the land on the north-eastern side of the bridge (Lot 1 DP 1071695), adjacent to where a site compound would be established, due to an existing depression in the landform in this area and no floodgate being present.

Response

Roads and Maritime will inform CVC of this issue. Flooding impacts in general have been assessed within the REF with safeguards provided to avoid associated environmental impacts.

2.4 Issue 4, noise and vibration impacts

Submission number(s)

One submission (3) expressed concern regarding noise impacts associated with the proposal

Issue description

The respondent has been identified as a sensitive receiver in the noise assessment undertaken as part of the REF. The submission notes that the term 'sensitive receiver' is not defined within the REF. The submission expresses concern about high noise activities during construction, in particular piling and reverse alarms on plant and vehicles. The submission requests the contact details of the relevant RMS project manager before and during construction works to enable consultation to be continued throughout the project.

Response

Noise and vibration impacts associated with the proposal have been assessed within the REF and accompanying specialist, Noise and Vibration Assessment. Safeguards are provided in the REF to minimise impacts on sensitive receivers associated with the construction stage of the project including ongoing notification/ consultation with affected residents in proximity to the project including the submission writer. This includes providing appropriate contacts to adjacent residents during construction as per standard RMS practice.

2.5 Issue 5, temporary bridge

Submission number(s)

One submissions (4) by a local business, Attwal Buses was made in relation to the load rating of the temporary bridge to be provided during construction.

Issue description

A temporary two span bridge will be built immediately upstream of Briner Bridge to enable traffic to cross Coldstream River during upgrade of Briner Bridge. A query was raised by Attwal Buses regarding the load rating of the temporary bridge.

Response

The load rating of the temporary bridge to be provided during construction will be the same as the load rating on the current bridge.

3. Additional Consultation with Agencies

As part of ongoing consultation with stakeholders the final REF was provided to the following agencies for comment:

- NSW Department of Primary Industries (DPI) Fisheries.
- NSW Office of Environment and Heritage (OEH).
- Clarence Valley Council (CVC).
- RMS (Maritime)
- NSW DPI (Crown Lands).

3.1 Agency Responses

Responses were received from NSW DPI Fisheries and OEH Heritage which are summarised below and included in **Attachment A**.

OEH (Heritage)

OEH (Heritage) noted that:

- A cautious approach has consistently been advised for the design of the proposed works to Briner Bridge so that the potential State heritage values are not compromised.
- The endorsed *Timber Truss Bridges: Overarching Conservation Management Plan* (2018) has been used to evaluate the proposed changes to the bridge and that the proposed designs in the SOHI are consistent with the revised designs that the Heritage Division was given an opportunity to comment on in September 2018.
- While consultation was undertaken on the proposed upgrade, at no time has the Heritage Division undertaken a full merit review of the proposed designs or provided endorsed stamped plans.
- As previously recommended, the final design of the traffic barrier should be referred to the RMS Heritage team to discuss any potential heritage impacts of the design before committing to a solution.

In response to concerns raised it is noted, Roads and Maritime have consulted with the relevant teams internally through the development of the bridge design. The Roads and Maritime Services Heritage Division has expressed satisfaction with the design and have been closely involved in the development of the Statement of Heritage Impacts. Roads and Maritime Services will continue to work with OEH during the development of the Conservation Management Plan upon completion of the bridge upgrade, noting approval of the current design is not required on the condition that it meets the overarching Conservation Management Plan for Timber Bridges and the agreed design criteria for Briner Bridge.

NSW DPI (Fisheries)

NSW DPI (Fisheries) noted that:

- NSW DPI (Fisheries) has no objection to the proposed works. In accordance with Section 199 (1) (b) of the *Fisheries Management Act* (FM Act) a list of matters for consideration are provided (refer to **Attachment A**) which must be considered by Roads and Maritime. These considerations include:
 - Administration requirements for site operation
 - Erosion and sediment control
 - Best practice dewatering and instream works
 - Timing of works for low flows

- Armouring and other rock works to be adequately designed and managed
- Avoiding harming marine vegetation
- Post works rehabilitation
- Observation of fish health during the project life

4. Environmental management

The REF for the Briner Bridge upgrade identified the framework for environmental management, including safeguards and management measures that would be adopted to avoid or reduce environmental impacts (Section 7 of the review of environmental factors).

After consideration of the issues raised in the public submissions and additional consultation with agencies, the safeguard and management measures of the REF have been reviewed. No changes are considered necessary to these safeguards based on the matters raised.

Environmental management for the project will be guided by the framework and measures outlined below.

4.1 Environmental management plans (or system)

A number of safeguards and management measures have been identified 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 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 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 will be reviewed and certified by Roads and Maritime Northern Region environment staff, 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 will 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 G40 – Clearing and Grubbing, QA Specification G10 - Traffic Management and *AS4361.1 Guide to Lead Paint Management - Industrial Applications*.

4.2 Summary of safeguards and management measures

The REF for the Briner Bridge upgrade identified a range of environmental outcomes and management measures that would be required to avoid or reduce the environmental impacts, including social impacts.

After consideration of the issues raised in the public submissions, and additional consultation with agencies the environmental management measures for the project (refer to Chapter 7 of the REF) have been reviewed. No changes are considered necessary to these safeguards based on the matters raised. The environmental management measures in Table 3-1 will guide the subsequent phases of the Briner Bridge upgrade.

Table 4-1: Summary of environmental safeguards and management measures

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|-----|------------------|---|---|--|
| 1 | Microbat impacts | Provisions of the MMP (Annexure F) will be undertaken as part of the proposal. Key management actions of the MMP are summarised below. | All personnel | Detailed design, during construction and post construction |
| 2 | Microbat impacts | Pre-construction monitoring of Large-footed Myotis numbers to determine baseline population estimates. | Ecologist | Two breeding season surveys (ie October to mid-April inclusive) prior to construction commencing. It is noted that an August 2018 survey has already been completed by GeoLINK, 2018. |
| 3 | Microbat impacts | Provide an additional four bat boxes with four chambers per box under Briner Bridge at least one month prior to construction commencing to encourage further use of these boxes as opposed to gaps/ cavities within the bridge structure. The primary aim of this action is to assist with microbat exclusion. Bat boxes to be used are to be designed in consultation with the ecologist and manufacturer to achieve an increased life, particularly with respect to the attachment of the top plate to the bat box which has been found to fail on bat boxes currently installed on Briner Bridge. | Project construction manager Ecologist | At least one month prior to construction commencing (preferably as soon as possible). |
| 4 | Microbat impacts | Install five bat boxes within the most appropriate locations adjacent to the bridge (within 100 metres). Locations to be selected by the Ecologist and would target sites which could act as flood refuge habitat. If the boxes are installed in trees, they would be positioned so they: <ul style="list-style-type: none"> • Are >30 metres from the construction footprint • Overhang the Coldstream River • Are shaded and protected from the weather as best as possible • Have a flood immunity similar to the existing Briner Bridge (ie are installed at a similar height above the river to the bridge decking). Bat boxes to be used are to be designed in consultation with the ecologist and manufacturer to achieve an increased life particularly with respect to the attachment of the top plate to the bat box which has been found to fail on bat boxes currently installed on Briner Bridge. | Project construction manager Ecologist | At least one month prior to construction commencing (preferably as soon as possible). |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|-----|------------------|--|---|--|
| 5 | Microbat impacts | <p>The following microbat compensatory habitat would be incorporated into the refurbished Briner Bridge:</p> <ul style="list-style-type: none"> • Microbat habitat type 1 – Cylindrical recesses roughened (16) (65 mm x 150 mm) built into the thickened underside of the kerb on approach spans of the bridge over water (refer to MMP) • Microbat habitat type 2 – Local roughened areas (16) under the deck/ above girders are to be provided on approach spans over water. Concrete pipe sections (65 mm x 150 mm) are to be adhered to the underside of the deck in these locations (refer to MMP) • Microbat habitat type 3 – Attachment lugs for bat boxes are to be attached to each cross girder over water to accommodate bat boxes at the completion of the project (refer to MMP). | Roads and Maritime design and construction team | Detailed design phase, construction, |
| 6 | Microbat impacts | Undertake staged microbat exclusion so all potential microbat habitat within the bridge structure (excluding bat boxes) is no longer available for microbat roosting. | Project construction manager Ecologist | <p>For parts of the bridge being used by microbats - outside the Large-footed Myotis breeding season (ie between mid-April and October) avoiding periods of prolonged torpor.</p> <p>For parts of Briner Bridge not being utilised by microbats (as evidenced by ecologist surveys), exclusion can occur within the breeding season without an increased risk to breeding Large-footed Myotis.</p> |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|-----|------------------|---|--|---|
| 7 | Microbat impacts | <p>Once microbat exclusion is installed, temporarily relocate bat boxes from Briner Bridge to beneath the temporary bridge, in appropriate locations over water as agreed by the Project Ecologist.</p> <p>Relocation of the bat boxes would be undertaken by the ecologist with assistance from the construction team. Bat boxes supporting <20 roosting bats can be relocated by:</p> <ul style="list-style-type: none"> Securely covering the base of the box with cloth material (eg taped on pillow case) to block the entrance Remove the box from the existing roost location Relocating the box as quickly and steadily as possible to the new location Once the bats have settled, removing the cloth material. <p>Where ≥ 20 roosting microbats are roosting in a bat box, relocation would occur at night once the bats have flown out for the night.</p> | <p>Project construction manager</p> <p>Ecologist</p> | <p>Upon completion of microbat exclusion (refer above).</p> <p>Outside Large-footed Myotis breeding period.</p> |
| 8 | Microbat impacts | <p>Work areas would be inspected daily during the Briner Bridge upgrade, including:</p> <ul style="list-style-type: none"> Morning inspections to ensure exclusion is intact and no potential microbat breaches have occurred. An ecologist would carry out inspections if potential exclusion breaches have occurred Afternoon inspections carried out to ensure that exclusion measures are functional at the end of each day to prevent microbats accessing the bridge at night. | <p>Project construction manager</p> <p>Ecologist</p> <p>Team leader</p> <p>Work Supervisor</p> | Daily during bridge upgrade work. |
| 9 | Microbat impacts | <p>At the commencement of high noise activities (eg piling, construction of rock platforms etc), a spotter is to be placed to observe bat boxes and make observations on microbat behaviour responses. Should microbats be observed leaving roost sites (during the day) the ecologist will be advised and will assess the need for further mitigation measures for noise/ vibration (eg material screening etc).</p> | <p>Project construction manager</p> <p>Ecologist</p> | At the commencement of high noise activities or in the event that microbats are observed leaving the roost site during the day. |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|-----|------------------------------|---|---|---|
| 10 | Microbat impacts | <p>Upon completion of the works, bat boxes on the temporary bridge would be moved to appropriate locations on the refurbished bridge over water as agreed by the Project Ecologist.</p> <p>Where this cannot be undertaken outside of the breeding season, this will be undertaken outside of periods when flightless young are present within boxes (as evidenced by ecologist surveys).</p> | <p>Project construction manager</p> <p>Construction team</p> <p>Ecologist</p> | <p>Upon completion of works.</p> <p>Outside the breeding season if possible (ie between mid-April and October).</p> |
| 11 | Microbat impacts | Monitor the MMP management actions to assess their effectiveness. | <p>Project construction manager</p> <p>Ecologist</p> | Pre, during and post construction. |
| 12 | Microbat impacts | At the completion of the monitoring program, bat boxes installed within the riparian zone, adjacent to Briner Bridge would be removed by the ecologist. Where bat boxes are occupied the ecologist will undertake exclusion in accordance with the requirements of Section 2.2 of the MMP. | <p>Project construction manager</p> <p>Ecologist</p> | Upon completion of works. |
| 13 | Removal of native vegetation | Native vegetation removal will be minimised through detailed design. | <p>RMS Project Manager</p> <p>RMS Project Engineer</p> | Detailed design |
| 14 | Removal of native vegetation | The footprint of the site (including site compound, accesses and construction areas) will be clearly delineated in accordance with <i>Guide 2: Exclusion zones of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects</i> (RTA 2011). Exclusion zones will include tree protection zones around trees to be retained in proximity to the proposed work (such as at the site compounds) in accordance with the <i>Australian Standard 4970-2009 Protection of trees on development sites</i> . | RMS Project Engineer | Construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|-----|--|--|---|-----------------------|
| 15 | Removal of native vegetation | <p>Pre-clearing surveys will be undertaken in accordance with <i>Guide 1: Pre-clearing process</i> of the <i>Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects</i> (RTA 2011). These guidelines cover the felling of both non-habitat and habitat trees and the rescue and relocation of fauna.</p> <p>An experienced, licensed ecologist or appropriately trained RMS staff is to undertake pre-clearing surveys prior to vegetation removal to inspect trees for the presence of fauna. If fauna is identified a licensed ecologist is to be engaged to perform any spotter catcher duties required.</p> | <p>RMS Project Engineer</p> <p>RMS Environmental Officer</p> <p>Ecologist</p> | Prior to construction |
| 16 | Removal of native vegetation | <p>Vegetation removal will be undertaken in accordance with <i>Guide 4: Clearing of vegetation and removal of bushrock</i> of the <i>Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects</i> (RTA 2011).</p> <p>Manual removal of vegetation is preferred to avoid mulch entering the river.</p> | RMS Project Engineer | During construction |
| 17 | Removal of native vegetation | The unexpected species find procedure is to be followed under <i>Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects</i> (RTA 2011) if threatened ecological communities, not assessed in the biodiversity assessment, are identified in the proposal site. | <p>RMS Project Manager</p> <p>RMS Project Engineer</p> | During construction |
| 18 | Removal of threatened species habitat and habitat features | Habitat removal will be undertaken in accordance with <i>Guide 4: Clearing of vegetation and removal of bushrock</i> of the <i>Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects</i> (RTA 2011). | <p>RMS Project Manager</p> <p>RMS Project Engineer</p> | During construction |
| 19 | Removal of threatened species habitat and habitat features | Habitat will be replaced or re-instated in accordance with <i>Guide 5: Re-use of woody debris and bushrock</i> and <i>Guide 8: Nest boxes</i> of the <i>Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects</i> (RTA 2011). | <p>RMS Project Manager</p> <p>RMS Project Engineer</p> | During construction |
| 20 | Removal of threatened species habitat and habitat features | The unexpected species find procedure is to be followed under <i>Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects</i> (RTA 2011) if threatened fauna, not assessed in the biodiversity assessment, are identified in the proposal site. | <p>RMS Project Manager</p> <p>RMS Project Engineer</p> | During construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|-----|---|---|---|---------------------|
| 21 | Removal of threatened plants | Pre-clearing surveys will be undertaken in accordance with <i>Guide 1: Pre-clearing process</i> of the <i>Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects</i> (RTA 2011). | RMS Project Manager | During construction |
| 22 | Removal of threatened plants | The unexpected species find procedure is to be followed under <i>Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects</i> (RTA 2011) if threatened flora species, not assessed in the biodiversity assessment, are identified in the proposal site. | RMS Project Engineer | During construction |
| 23 | Aquatic impacts | Aquatic habitat will be protected in accordance with <i>Guide 10: Aquatic habitats and riparian zones</i> of the <i>Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects</i> (RTA 2011) and Section 3.3.2 <i>Standard precautions and mitigation measures</i> of the <i>Policy and guidelines for fish habitat conservation and management Update 2013</i> (DPI (Fisheries NSW) 2013). | RMS Project Manager RMS Project Engineer | During construction |
| 24 | Aquatic impacts | Stumps of trees removed must be left insitu to protect bank stability. | RMS Project Manager RMS Project Engineer | During construction |
| 25 | Aquatic impacts | Controls (such as drop nets and shade cloths) will be used when required during overwater activities to prevent entry of construction sourced debris entering Coldstream River. | RMS Project Manager RMS Project Engineer | During construction |
| 26 | Groundwater dependent ecosystems | Interruptions to water flows associated with groundwater dependent ecosystems will be minimised through detailed design. | RMS Project Manager | Detailed design |
| 27 | Changes to hydrology | Changes to existing surface water flows will be minimised through detailed design. | RMS Project Engineer | Detailed design |
| 28 | Fragmentation of identified habitat corridors | Exclusion zones will be set up at the limit of clearing in accordance with <i>Guide 2: Exclusion zones</i> of the <i>Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects</i> (RTA, 2011). | RMS Project Manager | During construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|-----|--|--|---|---------------------|
| 29 | Edge effects on adjacent native vegetation and habitat | Exclusion zones will be set up at the limit of clearing in accordance with <i>Guide 2: Exclusion zones of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects</i> (RTA 2011). | RMS Project Manager RMS Project Engineer | During construction |
| 30 | Injury and mortality of fauna | Fauna will be managed in accordance with <i>Guide 9: Fauna handling of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects</i> (RTA 2011). Should injured fauna be located on the site during the work, local wildlife care groups and/or local veterinarians must be contacted immediately, and arrangements made for the immediate welfare of the animal. The phone number of the local fauna rescue group must be known to the project foreman. | RMS Project Engineer Ecologist | During construction |
| 31 | Invasion and spread of weeds | Weed species will be managed in accordance with <i>Guide 6: Weed management of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects</i> (RTA 2011). | RMS Project Manager RMS Project Engineer | During construction |
| 32 | Invasion and spread of pests | Pest species will be managed in accordance with the <i>Biosecurity Act 2015</i> . | RMS Project Manager RMS Project Engineer | During construction |
| 33 | Invasion and spread of pathogens and disease | Pathogens will be managed in accordance with <i>Guide 2: Exclusion zones of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects</i> (RTA 2011). | RMS Project Manager RMS Project Engineer | During construction |
| 34 | Noise, light and vibration | Shading and artificial light impacts will be minimised through detailed design. | | Detailed design |
| 35 | Hydrological impacts | A CEMP must be prepared in accordance with the specifications set out in the <i>QA Specification G36 - Environmental Protection (Management) System</i> to guide the implementation of environmental impact mitigation measures, identify key roles and responsibilities for environmental monitoring and methods of reporting incidents. | RMS Project Manager | Pre-construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|-----|-----------------------|---|----------------------|--------------------------------|
| 36 | Erosion sedimentation | <p>A site-specific Erosion and Sediment Control Plan is to be prepared and implemented as part of the CEMP.</p> <p>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, sumps, scour protection; stabilising disturbed areas as soon as possible; check dams, fencing and swales and staged implementation arrangements.</p> <p>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.</p> <p>Work in areas where soil may be disturbed is to only commence once all relevant 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.</p> | RMS Project Manager | Pre-construction, construction |
| 37 | Erosion sedimentation | Erosion and sedimentation controls must be checked and maintained (including clearing of sediment from behind barriers) weekly (including 24 hours after any precipitation events) and records kept and provided on request. | RMS Project Engineer | Pre-construction, construction |
| 38 | Erosion sedimentation | <p>An Environmental Work Method Statement (EWMS) is required for proposed instream works (including piling installation and removal) and dewatering of any areas prior to commencement of those activities. The EWMS would include measures to avoid or minimise risks from erosion, sedimentation, ASS and PASS to water quality and biodiversity. The EWMS would be approved by the Roads and Maritime Environment Officer and form part of the Construction Environment Management Plan.</p> <p>Dewatering would be undertaken in accordance with RMS Environmental Fact Sheet 10: <i>Dewatering</i> and the EWMS.</p> | RMS Project Manager | Pre-construction, construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|-----|-----------------------|--|----------------------|---------------------------------|
| 39 | Erosion sedimentation | <p>For all works likely to generate sediment within the waterway or on the adjacent banks of Coldstream River (including all temporary access works and piling), a full depth sediment/ silt curtain and floating hydrocarbon boom will be placed in Coldstream River to isolate the work area, weighted to the bed and secured to accommodate tidal flow. The hydrocarbon boom will be installed inside of the silt curtain when both are in operation. Install the curtain prior to commencement of instream works and retain until works that risk mobilising sediment are completed. This will remain in place until the completion of sediment generating activities.</p> <p>Silt curtains/ floating booms are to be installed, monitored and maintained as needed to contain any sediment.</p> <p>If sediment plumes are observed outside the containment system, then the activity will stop until the containment system has been repositioned to encompass the area of disturbance.</p> | RMS Project Engineer | Pre-construction, construction |
| 40 | Erosion sedimentation | Disturbance of natural sediments and vegetation must be minimised. | RMS Project Engineer | Pre-construction, construction |
| 41 | Erosion sedimentation | Erosion and sediment control measures must not be removed until the work is complete or disturbed areas are stabilised. | RMS Project Engineer | Construction, post-construction |
| 42 | Erosion sedimentation | Maintenance of site compounds must be in accordance with the <i>RMS Stockpile Site Management Guideline</i> (EMS-TG-10). | RMS Project Engineer | Pre-construction, construction |
| 43 | Erosion sedimentation | Cleaning of tools and equipment must occur within a designated wash-down bay. The wash-down bay must be bunded and placed so that water does not flow directly into Coldstream River, but is captured and contained or filtered and allowed to soak into the ground. | RMS Project Engineer | Construction |
| 44 | Erosion sedimentation | Water utilised for cleaning of tools must be minimised and obtained from a licensed location or town water supply. | RMS Project Engineer | Construction |
| 45 | Erosion sedimentation | Clean equipment and vehicles must be used, with equipment being cleaned down before being brought to the site | RMS Project Engineer | Pre-construction, construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|-----|-----------------------|---|---------------------------------------|-----------------------------------|
| 46 | Reduced water quality | A site-specific emergency spill plan will be developed and include spill management measures in accordance with the Roads and Maritime <i>Code of Practice for Water Management</i> (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 Roads and Maritime and EPA officers). | RMS Project Manager | Detailed design/ Pre-construction |
| 47 | Reduced water quality | A spill containment kit for aquatic and terrestrial spills must be available at all times. The spill kit must be appropriately sized for the volume of substances at the work site. All personnel must be made aware of the location of the kit and trained in its effective deployment. | RMS proposal Manager | Pre-construction, construction |
| 48 | Reduced water quality | If a spill occurs, the Roads and Maritime's Environmental Incident Classification and Reporting Procedure must be followed, and the Roads and Maritime Project Manager notified as soon as practicable. | RMS Project Manager/ Project Engineer | Pre-construction, construction |
| 49 | Reduced water quality | Locate stockpiles of dispersible material away from areas of concentrated overland flow. | RMS Project Manager/ Project Engineer | Construction |
| 50 | Reduced water quality | Required fuels and other liquids must be stored in self-safe chemical storage containers. | RMS Project Manager/ Project Engineer | Pre-construction, construction |
| 51 | Reduced water quality | Unnecessary storage of fuels, lubricants or other compounds on-site must be avoided. | RMS Project Manager/ Project Engineer | Pre-construction, construction |
| 52 | Reduced water quality | Refuelling of plant and equipment is to occur in impervious bunded areas located a minimum of 50 metres from drainage lines or waterways otherwise a double bund is required. | RMS Project Manager/ Project Engineer | Construction |
| 53 | Reduced water quality | All equipment must be maintained in good working order and operated according to manufacturer's specifications. | RMS Project Engineer | Pre-construction, construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|-----|-----------------------|---|----------------------|-----------------------------------|
| 54 | Reduced water quality | All work must be undertaken according to RMS <i>Specifications B223 (Management of Lead Chromium and Asbestos in Bridge Maintenance Painting)</i> and <i>B220 (Protective treatment of Bridge Steel Work)</i> and <i>AS4361.1: Guide to lead paint management, Part 1: Industrial Application</i> . | RMS Project Engineer | Construction |
| 55 | Reduced water quality | Visual monitoring of local water quality (ie turbidity, hydrocarbon spills/ slicks) is to be undertaken on a regular basis to identify any potential spills or deficient silt curtains or erosion and sediment controls. | RMS Project Engineer | Construction |
| 56 | Reduced water quality | Construction vessels (including barges) are only to be used at suitable tides when no less than 600mm clearance is available between the underside of the vessel and the bed of the waterway. | RMS Project Engineer | Construction |
| 57 | Flooding | Prepare an emergency response plan for flood events for the proposed work. Include a procedure for rapid removal in the emergency response plan and location for the material. | RMS Project Manager | Pre-construction |
| 58 | Flooding | Establish the compound site in such a way to limit potential impacts from flooding (eg on as high a ground as possible and that are readily removed in the event of a flood). | RMS Project Manager | Construction |
| 59 | Flooding | <p>Include a Work Method Statement (WMS) in CEMP on compound site evacuation procedure. Issues to be addressed in the WMS include:</p> <ul style="list-style-type: none"> • Responsibility for monitoring flood threat/ flood warning information and how it is to be done • Training for staff on evacuation • Demonstrate that specific equipment for evacuation is readily available • Detail where compound site equipment, waste, materials, site sheds etc. | RMS Project Manager | Pre-construction |
| 60 | Contaminated land | If contaminated areas are encountered during construction, appropriate control measures will be implemented to manage the immediate risks of contamination. All other works that may impact on the contaminated area will cease until the nature and extent of the contamination has been confirmed and any necessary site-specific controls or further actions identified in consultation with the Roads and Maritime Environment Manager and/or EPA. | RMS Project Manager | Detailed design/ Pre-construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|-----|--------------------|--|---------------------|-------------------|
| 61 | Acid sulfate soils | <p>Potential or actual acid sulfate soils are to be managed in accordance with the <i>Roads and Maritime Services Guidelines for the Management of Acid Sulfate Materials 2005</i>.</p> <p>An Acid Sulfate Management Plan (ASSMP) will be prepared by Roads and Maritime and approved by the Environment Officer before the commencement of any activities likely to expose ASS/PASS and at a minimum, the plan will include:</p> <ul style="list-style-type: none"> • Management measures for the safe excavation and timing to cover excavation, isolated storage and treatment area, neutralisation and re-use or disposal of neutralised soils • Requirements for additional testing to determine predicted liming rates of excavated spoil once quantities are determined. <p>Specific controls to be implemented will include:</p> <ul style="list-style-type: none"> • Capping exposed surfaces with clean fill to prevent oxidation • Placing excavated ASS separately in a lined, bunded and covered area • Neutralising ASS for reuse on-site (where appropriate) by using additives such as lime • Disposal at a licensed waste facility. <p>The ASSMP will be included in the CEMP.</p> | RMS Project Manager | Pre-construction |
| 62 | Soils | Imported site compound/ stockpile base materials must be sourced as clean-fill from a licensed quarry or approved site (if required). | RMS Project Manager | Pre-construction |
| 63 | Soils | Upon completion of the work and usage of the site compound, these areas must be re-established to similar existing conditions. | RMS Project Manager | Post-construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|-----|-----------------------|---|---|-----------------------------------|
| 64 | Traffic and transport | <p>A Traffic Management Plan (TMP) will be prepared and implemented as part of the CEMP. The TMP will be prepared in accordance with the Roads and Maritime <i>Traffic Control at Work Sites Manual</i> (RTA, 2010), Australian Standard 1742.3 <i>Manual of uniform control devices</i> and <i>QA Specification G10 Control of Traffic</i> (Roads and Maritime, 2008). The TMP will include:</p> <ul style="list-style-type: none"> • Confirmation of haulage routes • Measures to maintain access to local roads and properties • Site specific traffic control measures (including signage) to manage and regulate traffic movement • Methods to consult and inform the local community of impacts on the local road network • Access to construction sites including entry and exit locations and measures to prevent construction vehicles queuing on public roads • A response plan for any construction traffic incident • Consideration of other developments that may be under construction to minimise traffic conflict and congestion that may occur due to the cumulative increase in construction vehicle traffic • Monitoring, review and amendment mechanisms. | RMS Project Manager | Detailed design/ Pre-construction |
| 65 | Traffic and transport | Where possible, current traffic movements must be maintained during the work. Any disturbance must be minimised to prevent unnecessary traffic delays. | RMS Project Engineer | Construction |
| 66 | Traffic and transport | A project-specific consultation strategy must be developed and implemented in accordance with the RMS <i>Community Involvement – Practice Notes and Resource Manual</i> and <i>RMS Minor Project procedure, Communications for minor projects (ILC-MP-TP0-301)</i> . | RMS Project Manager | Pre-construction |
| 67 | Maritime | Approved navigational marks, signage and Marine Notices to be implemented and updated during the period of works. | RMS Project Manager/ RMS Project Engineer | Pre-construction, construction |
| 68 | Maritime | RMS Maritime will prepare and advertise the Marine Notice online. The Marine Notice may be required to be placed in the local press and to be advertised at local boat ramps. | RMS Project Manager RMS (Maritime) | Pre-construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|-----|----------|---|---------------------------------------|--------------------------------|
| 69 | Maritime | Consultation will be required throughout the duration of the works to develop forward plans for the on-water traffic management whilst the works are carried out and as plant and structures are deployed in different locations. | RMS Project Manager RMS (Maritime) | Pre-construction, construction |
| 70 | Maritime | All navigation aids and traffic management plans must be approved by RMS Maritime. | RMS Project Manager RMS (Maritime) | Pre-construction, construction |
| 71 | Maritime | Any work vessels involved in the project must comply with the relevant NSW Marine Legislation (ie day shapes, lights etc.). | RMS Project Manager | Construction |
| 72 | Maritime | Barges, work vessels and crew involved with the project must comply with the <i>Marine Safety (Domestic Commercial Vessels) National Law Act 2012</i> . | RMS Project Manager | Construction |
| 73 | Maritime | A minimum of one navigable channel span (at least six metres) must be open to navigation at all times unless approved by RMS Maritime. | RMS Project Manager | Construction |
| 74 | Maritime | A 4-knot lit Special Mark buoyage OR signage is to be installed at an appropriate distance (200 metres) from the structure/s. | RMS Project Manager | Construction |
| 75 | Maritime | Any submerged hazards must be marked with yellow aqua buoys sign written "Warning Submerged Hazard". These aqua buoys must be lit with yellow flashing lights if hazards are present before sunrise and after sunset. | RMS Project Manager | Construction |
| 76 | Maritime | Twenty-Eight days prior to works commencing the applicant must provide RMS Maritime with a full scope of works including maps noting all obstructions to navigation associated with the proposed works, (vessel/ barge anchoring, scaffolding and silt curtain locations etc.) so a Marine Notice can be prepared and advertised. | RMS Project Manager | Pre-construction |
| 77 | Maritime | Channel blocked day shapes and lights to be suspended in the centre of all blocked spans of the bridge ie any works that impact the current bridge navigation channel must be closed. These signals mean vessels will NOT attempt to navigate in that part of the channel: Bridge span blocked or Channel is blocked. | RMS Project Manager | Construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|-----|--|---|---|--------------------------------|
| 78 | Airborne noise/ ground-borne vibration | <ul style="list-style-type: none"> • Provide phone calls or specific notification for Receiver 1-4, particularly relating to driven piling activities and activities scheduled outside standard construction hours • Periodic notification of all receivers (monthly letterbox drop or equivalent) • Website • Project information line • Construction Response Line • Email distribution list. | RMS Project Manager | Pre-construction, construction |
| 79 | Airborne noise/ ground-borne vibration | <p>All employees, contractors and subcontractors will receive an environmental induction. The induction must at least include:</p> <ul style="list-style-type: none"> • All relevant project specific and standard noise and vibration mitigation measures • Relevant licence and approval conditions • Permissible hours of work • Any limitations on high noise generating activities • Location of nearest sensitive receivers • Construction employee parking areas • Designated loading/ unloading areas and procedures • Site opening/ closing times (including deliveries) • Environmental incident procedures. | RMS Project Manager/ RMS Project Engineer | Pre-construction, construction |
| 80 | Airborne noise/ ground-borne vibration | <p>No swearing of unnecessary shouting or loud stereos/ radios on-site.</p> <p>No dropping of materials from height, throwing of metal items and slamming of doors.</p> | Project team | Construction |
| 81 | Airborne noise/ ground-borne vibration | <p>Verification noise monitoring is required to be undertaken for driven piling.</p> <p>Verification noise monitoring is required for noisy activities outside standard construction hours.</p> <p>An environmental noise monitor would be suitable for verification noise monitoring, noting the anticipated emergence of construction noise above the ambient noise environment and also the remoteness of the site. This monitoring could be undertaken by RMS, the construction contractor or a third party.</p> <p>Monitoring of noise and vibration should be undertaken upon receipt of complaints.</p> | RMS Project Manager | Construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|-----|--|---|---|--------------------------------|
| 82 | Airborne noise/ ground-borne vibration | <p>Where feasible and reasonable, construction should be carried out during the standard daytime working hours. Work generating high noise and/or vibration levels should be scheduled during less sensitive time periods.</p> <p>The periods 7:00 am - 8:00 am and 1:00 pm - 6:00 pm Saturday and all of Sunday and public holidays are outside standard construction hours. Scheduling noisy activities during these periods should be avoided where practical. It is noted that work during these periods will be required on occasion.</p> | RMS Project Manager | Construction |
| 83 | Airborne noise/ ground-borne vibration | <p>Respite should be negotiated with Receivers 1-4 during driven piling and other high noise and vibration generating activities. Respite agreed by negotiation may vary from the typical respite period detailed below (ie more or less respite may be agreed with impacted residents).</p> <p>In general, the following respite is provided unless otherwise agreed with the relevant receivers. High noise and vibration generating activities eg driven piling may only be carried out in continuous blocks, not exceeding three hours each, with a minimum respite period of one hour in between each block.</p> | RMS Project Engineer/ RMS Project Manager | Construction |
| 84 | Airborne noise/ ground-borne vibration | Use quieter and less vibration emitting construction methods where feasible and reasonable. | RMS Project Engineer | Construction |
| 85 | Airborne noise/ ground-borne vibration | The noise levels of plant and equipment will have operating Sound Power or Sound Pressure Levels compliant with the criteria in Table F.1 of the CNVG. | RMS Project Engineer | Pre-construction, construction |
| 86 | Airborne noise/ ground-borne vibration | The noise levels of plant and equipment items are to be considered in rental decisions and in any case cannot be used on-site unless compliant with the criteria in Table F.1 of the CNVG. | RMS Project Manager | Pre-construction |
| 87 | Airborne noise/ ground-borne vibration | Simultaneous operation of noisy plant within discernible range of a sensitive receiver will be avoided. | RMS Project Engineer | During work |
| 88 | Airborne noise/ ground-borne vibration | The offset distance between noisy plant and adjacent sensitive receivers will be maximised. | RMS Project Engineer | During work |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|-----|--|---|---|-------------|
| 89 | Airborne noise/ ground-borne vibration | Plant used intermittently will be throttled down or shut down when not in use. | RMS Project Engineer | During work |
| 90 | Airborne noise/ ground-borne vibration | Noise-emitting plant will be directed away from sensitive receivers. | RMS Project Engineer | During work |
| 91 | Airborne noise/ ground-borne vibration | Plan traffic flow, parking and loading/ unloading areas to minimise reversing movements within the site. | RMS Project Engineer/ RMS Project Manager | During work |
| 92 | Airborne noise/ ground-borne vibration | Non-tonal reversing beepers (or an equivalent mechanism) will be fitted and used on all construction vehicles and mobile plant regularly used on-site and for any out of hours work. | RMS Project Engineer | During work |
| 93 | Airborne noise/ ground-borne vibration | Loading and unloading of materials/ deliveries will occur as far as possible from sensitive receivers. | RMS Project Engineer | During work |
| 94 | Airborne noise/ ground-borne vibration | Select site access points and roads as far as possible away from sensitive receivers. | RMS Project Engineer/ RMS Project Manager | Pre-work |
| 95 | Airborne noise/ ground-borne vibration | Dedicated loading/ unloading areas will be shielded if close to sensitive receivers. | RMS Project Engineer | During work |
| 96 | Airborne noise/ ground-borne vibration | Delivery vehicles will be fitted with straps rather than chains for unloading, wherever possible. | RMS Project Engineer/ RMS Project Manager | During work |
| 97 | Airborne noise/ ground-borne vibration | Stationary noise sources will be enclosed or shielded whilst ensuring that the occupational health and safety of workers is maintained. Appendix D of AS 2436: 2010 lists materials suitable for shielding. | RMS Project Engineer | During work |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|-----|-------------------------|--|-----------------------|-----------------------------------|
| 98 | Aboriginal heritage | <ul style="list-style-type: none"> • <i>The Standard Management Procedure - Unexpected Heritage Items</i> (Roads and Maritime,) will be followed in the event that an unknown or potential Aboriginal object/s, including skeletal remains, is found during construction. This applies where Roads and Maritime 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 • All works in the vicinity of the find must cease and the Roads and Maritime Services Aboriginal cultural heritage officer and regional environment manager contacted immediately • Work will only re-commence once the requirements of that Procedure have been satisfied. | Contactors | Detailed design/ pre-construction |
| 99 | Aboriginal heritage | All personnel working on-site must be advised of their responsibilities under the NPW Act. | All personnel on-site | Pre-construction |
| 100 | Non-Aboriginal heritage | <p>The bridge and its setting will be subject to a pre and post-works archival photographic recording. The recording will be undertaken by a suitably qualified professional and meet NSW Heritage Office standards as per:</p> <p><i>NSW Heritage Office. 2005. Photographic Recording of Heritage Items using Film or Digital Capture.</i></p> <p>When the archival record is complete, it will be made available to the Clarence River Historical Society; Clarence Valley Council and Library (Local History Collection) and NSW Heritage Office.</p> | RMS Project Manager | Pre-construction |
| 101 | Non-Aboriginal heritage | Roads and Maritime implement its <i>Recycling of Used Bridge Timbers Policy</i> , when dismantling the bridge. Roads and Maritime or its contractors are able to recover timber suitable for research or reuse purposes. | RMS Project Manager | Construction |
| 102 | Non-Aboriginal heritage | <p>Application to the NSW Heritage Office for the SHR listing of Briner Bridge be undertaken as planned and as recommended in the <i>Briner Bridge Heritage Assessment</i> (Futurepast 2014) which complies with the Timber Roads and Maritime Truss Bridge Conservation Strategy.</p> <p>Updated listing information should acknowledge the history and original form of the bridge but be amended to reflect alterations associated with the proposed program of works (if approved). The Roads and Maritime s170 listing for the site will also be altered accordingly.</p> | RMS Project Manager | Post-construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|-----|---------------------------------------|--|---|-----------------------------------|
| 103 | Non-Aboriginal heritage | Although any remains associated with the former 1880s ferryman's cottage/ hut are likely to be minimal and are outside of the immediate works impact area, an exclusion zone and appropriate buffer will be established at the approximate location of the structure prior to the commencement of any works in consultation with a Heritage specialist (refer to figure 58 within SoHI). | RMS Project Manager | Post-construction |
| 104 | Non-Aboriginal heritage | The <i>Standard Management Procedure - Unexpected Heritage Items</i> (Roads and Maritime, 2015) will be followed in the event that any unexpected heritage items, archaeological remains or potential relics of Non-Aboriginal origin are encountered. Work will only re-commence once the requirements of that Procedure have been satisfied. | RMS Project Manager RMS Project Engineer | Detailed design/ pre-construction |
| 105 | Landscape character and visual impact | All working areas will be maintained, kept free of rubbish and cleaned up at the end of each working day. | RMS Project Engineer | Construction |
| 106 | Landscape character and visual impact | Soil disturbance will be minimised where possible. | RMS Project Engineer | Construction |
| 107 | Landscape character and visual impact | The bridge will be re-painted in appropriate heritage colours. | RMS Project Engineer | Construction |
| 108 | Landscape character and visual impact | Any temporary site lighting is to be installed and operated in accordance with AS4282:1997 <i>Control of the Obtrusive Effect of Outdoor Lighting</i> . | RMS Project Engineer | Construction |
| 109 | Landscape character and visual impact | Bridge works are to be managed in accordance with Roads and Maritime <i>Bridge Aesthetics guidelines, 2012</i> . | RMS Project Manager | Construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|-----|--------------------|---|---|--|
| 110 | Communication Plan | <p>A Communication Plan (CP) would be prepared and implemented as part of the CEMP to help provide timely and accurate information to the community during construction. The CP would include (as a minimum):</p> <ul style="list-style-type: none"> • Mechanisms to provide details and timing of proposed activities to affected residents, including changed traffic and access conditions • Contact name and number for complaints. <p>The CP would be prepared in accordance with the Community Involvement and Communications Resource Manual (RTA, 2008).</p> | Contractor | Pre-construction |
| 111 | Notification | <p>All businesses, residential properties and other key stakeholders (eg schools, council, bus operators) affected by the activity would be notified at least 10 working days prior to commencement of the activity. Project/ community updates would be provided throughout the duration of works as relevant.</p> <p>Notification would utilise both digital and conventional (non-digital) modes of communication (eg media release, letter box drops, newsletters and regular updates to a project website).</p> <p>Notification would include an information package, including contact name and number for enquiries or complaints, the expected timeframe of works and any planned or potential disruptions to utilities/ services and changed road and traffic conditions. The package is also to include details on the Tucabia Briner Bridge/ road closure and the available detours.</p> <p>As part of the notification process, advanced warning signage would be established prior to and during the work to ensure road users are aware of the road closure and detours. Directional signage is to be placed along the detour routes.</p> <p>Additional and immediate notification to all affected stakeholders would also be undertaken during anticipated closure of the temporary bridge due to flood events including anticipated timeframes and dates for reinstatement of the temporary bridge post flood event.</p> <p>Roads and Maritime Services shall issue notification to representatives of the Native Title holders (NCD2015/003 - Yaegl People #2) for their consideration and comment prior to undertaking the works within Lot 1 DP 1104017.</p> | Roads and Maritime project manager and communications officer | Pre-construction and during construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|-----|--|--|---|--|
| 112 | Consultation | <p>Ongoing stakeholder and community consultation would be undertaken in accordance with the <i>Roads & Maritime Communication Toolkit</i>. Consultation would include:</p> <ul style="list-style-type: none"> • Clarence Valley Shire Council • Residents and businesses within a minimum of 2.7 kilometres of the proposal • Emergency services • Tucabia Rural Fire Service • Bus operators • Local schools. | Roads and Maritime project manager and communications officer | Pre-construction and during construction |
| 113 | Noise and vibration specific notification and consultation | <p>Implement notification and community consultation measures with regard to airborne noise and ground-borne vibration impacts from the works, including:</p> <ul style="list-style-type: none"> • Periodic notification of all identified receivers (letterbox drop or equivalent) • Website • Project information line • Construction Response Line • Email distribution list • For highly noise emitting activities and activities scheduled outside of standard construction hours, provide phone calls or specific notification for each of the identified receivers (this is an additional measure as per noise assessment). | Roads and Maritime project manager and communications officer | Pre-construction and during construction |
| 114 | Traffic | <p>As per the notification process, advanced warning signage would be established prior to and during the work to ensure road users are made aware of changed traffic conditions and detour directions.</p> <p>Excluding the required detours, where possible, current traffic movements and property accesses would be maintained during the work. Any disturbance would be minimised to prevent unnecessary traffic delays.</p> | Roads and Maritime project engineer and work supervisor | Pre-construction and during construction |
| 115 | Waterway | <p>Advanced warning signage and/or beacons (appropriate for any applicable day and night time maritime requirements) would be established prior to and during the work to ensure any users of the Coldstream River are aware of restricted access, changed navigational conditions or hazards within the work area and waterway. Signage will be provided at boat ramp to inform waterway users of changed access conditions at the bridge.</p> | Roads and Maritime project engineer and work supervisor | Pre-construction and during construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|-----|---------------------|---|--|--|
| 116 | School bus services | Maintain ongoing consultation and cooperation between Roads and Maritime and School Bus Services prior to and for the duration of the project, to ensure no adverse or unmanageable impact to important services. Any anticipated closure of the temporary bridge during flood events would need to be communicated to the affected School Bus Service. | Roads and Maritime project manager, communications officer, project engineer and work supervisor | Pre-construction and during construction |
| 117 | Complaints | A complaint handling procedure and register would be included in the CEMP and would include that all complaints would be responded to within 24 hours. | Roads and Maritime project manager and communications officer | During construction |
| 118 | Health and safety | Suitable site induction relating to site specific hazards would be undertaken for all contractor and Roads and Maritime staff. The work would be undertaken in accordance with all NSW health and safety legislative requirements and relevant Australian Standards. | Roads and Maritime project engineer and work supervisor | Pre-construction and during construction |
| 119 | Air quality | Vegetation or other materials are not to be burnt on-site. | RMS Project Engineer | Construction |
| 120 | Air quality | Vehicles transporting waste or other materials that may produce odours or dust are to be covered during transportation. | RMS Project Engineer | Construction |
| 121 | Air quality | Stockpiles or areas that may generate dust are to be managed to suppress dust emissions in accordance with the Roads and Maritime Services <i>Stockpile Site Management Guideline (EMS-TG-10)</i> . | RMS Project Engineer | Construction |
| 122 | Waste | If vegetation is to be mulched and transported off-site for beneficial reuse, it is to be assessed for the presence of weeds, pest, and other disease and a Mulch Management Plan prepared in accordance with the Roads and Maritime Technical Procedure: Mulch Management. Note that there may be restrictions to applying mulch to land outside the road reserve. | RMS Project Engineer | Construction |
| 123 | Waste | Potentially contaminated waste/ hazardous waste is to be stored separately from other waste streams generated at the site. | RMS Project Engineer | Construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|-----|--------|---|----------------------|---------------------------------|
| 124 | Waste | To minimise the risk of impacts from flooding, the quantity of waste stored on-site is not to exceed the volume of waste that can be removed in one to two days. | RMS Project Engineer | Construction |
| 125 | Waste | Potentially contaminated waste/ hazardous waste is to be stored separately from other waste streams generated at the site. | RMS Project Engineer | Construction |
| 126 | Waste | To minimise the risk of impacts from flooding, the quantity of waste stored on-site is not to exceed the volume of waste that can be removed in a short timeframe. | RMS Project Engineer | Construction |
| 127 | Waste | Resource management hierarchy principles are to be followed: <ul style="list-style-type: none"> • Avoid unnecessary resource consumption as a priority • Avoidance is followed by resource recovery (including reuse of materials, reprocessing, recycling and energy recovery) • Disposal is undertaken as a last resort (in accordance with the <i>Waste Avoidance & Resource Recovery Act 2001</i>). | RMS Project Engineer | Pre-construction, construction. |
| 128 | Waste | Working areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day. | RMS Project Engineer | Construction |
| 129 | Waste | There is to be no disposal or re-use of construction waste on to other land. | RMS Project Engineer | Construction |
| 130 | Waste | Waste is not to be burnt on-site. | RMS Project Engineer | Construction |
| 131 | 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. | RMS Project Engineer | Construction |
| 132 | Waste | Waste material is not to be left on-site once the work has been completed. | RMS Project Engineer | Construction |
| 133 | Waste | Non-recyclable wastes are to be collected and disposed of at licenced waste facilities only. | RMS Project Engineer | Construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|-----|--------|--|----------------------|--------------|
| 134 | Waste | Temporary storage of contaminated waste at the site compound is to be in sealed containers within a self-safe storage container and double bunded and sign posted as contaminated waste. | RMS Project Engineer | Construction |
| 135 | Waste | Storage of hazardous waste (ie removed lead paint flakes and dust), restricted solid waste or liquid waste (or a combination of these) on-site at any time is not to exceed five tonnes otherwise an Environment Protection Licence under the POEO Act is required. | RMS Project Engineer | Construction |
| 136 | Waste | Any contaminated waste generated by the proposal is to be disposed of in accordance with the EPA approved methods of waste disposal. | RMS Project Engineer | Construction |
| 137 | Waste | Bulk project waste (eg fill) sent to a site not owned by Roads and Maritime (excluding Office and Environment and Heritage licensed landfills) for land disposal is to have prior formal written approval from the landowner, in accordance with <i>Environmental Direction No. 20 - Legal Off-site disposal of Bulk RTA Project Wastes</i> . | RMS Project Engineer | Construction |
| 138 | Waste | CCA treated girders, off cuts and saw dust will be stored in a dedicated storage area in the site compound for as short a duration as possible. Where possible, CCA timber will be stacked clear of the ground and preferably covered to avoid an increase in moisture content as a result of contact and to lessen any possibility of leaching of substances to the ground. Disposal of off-cuts and waste treated timber will follow OEH's Protocols for Recycling Redundant Utility Poles and Bridge Timbers in New South Wales. For CCA and/or creosote preservative treated offcuts, the disposal facility is a lined landfill with an appropriate leachate management system with license conditions to receive waste. | RMS Project Engineer | Construction |
| 139 | Waste | All work will be undertaken according to <i>Roads and Maritime Specifications B223 (Management of Lead Chromium and Asbestos in Bridge Maintenance Painting)</i> and <i>B220 (Protective treatment of Bridge Steel Work)</i> and <i>AS4361.1: Guide to lead paint management, Part 1: Industrial Application</i> . | RMS Project Engineer | Construction |

| No. | Impact | Environmental safeguards | Responsibility | Timing |
|-----|-----------|--|---------------------|-----------------------------------|
| 140 | Utilities | <p>Prior to the commencement of works:</p> <ul style="list-style-type: none"> • The location of existing utilities and relocation details will be confirmed following consultation with the affected utility owners • If the scope or location of proposed utility relocation works falls outside of the assessed proposal scope and footprint, further assessment will be undertaken. | RMS Project Manager | Detailed design/ pre-construction |

4.3 Licensing and approvals

No additional licensing or approvals are required for the proposal.

5. References

Roads and Maritime Services 2018, *Briner Bridge upgrade, review of environmental factors*, Grafton.

Appendix A

Agency Consultation Responses



Our ref: SF18/90820
Doc18/871613

Ms Rochelle Hicks
Project Manager, Briner Bridge Upgrade
Roads and Maritime Services

By email: Rochelle.hicks@rms.nsw.gov.au
cc Denis Gojak, Denis.GOJAK@rms.nsw.gov.au

Dear Ms Hicks

Response to Review of Environmental Factors: Briner Bridge Upgrade

Thank you for the opportunity to provide comment on the above proposed works. The Heritage Division has reviewed the information provided in *Briner Bridge Upgrade Statement of Heritage Impact* Roads and Maritime Services, prepared by Dan Tuck, 1 October 2018.

It is our understanding that Briner Bridge is being considered to be included on the revised list of bridges to be retained under RMS *Timber Truss Bridge Conservation Strategy* (2012), as part of RMS regional and freight requirements program.

Therefore, a cautious approach has been consistently advised for the design of the proposed works to Briner Bridge so that the potential state heritage values are not compromised if in the future RMS proposes to include it in the *Strategy* and on the State Heritage Register.

I note that the endorsed *Timber Truss Bridges: Overarching Conservation Management Plan* (2018) has been used to evaluate the proposed changes to the bridge. I note also that the proposed designs in the SoHI are consistent with the revised designs that the Heritage Division was given an opportunity to comment on in September 2018.

I emphasise that while consultation was undertaken on the proposed upgrade, at no time has the Heritage Division undertaken a full merit review of the proposed designs or provided endorsed stamped plans supporting the selected design as implied in the SoHI (p59). As previously recommended, the final design of the traffic barrier should be referred to the RMS Heritage team to discuss any potential heritage impacts of the design before committing to a solution.

If you have any questions, please contact Verena Mauldon, Senior Heritage Officer, on 9895 6512 or at Verena.Mauldon@environment.nsw.gov.au.

Yours sincerely



Sarah Jane Brazil
Senior Team Leader Major Projects
Heritage Division, Office of Environment & Heritage
As delegate of the Executive Director
26 November 2018

OUR REF: C18/615

27 November 2018

Roads and Maritime Services
C/- Mr David Havilah
Senior Ecologist
GeoLINK
Via email: dhavilah@geolink.net.au

Dear Mr Havilah

Re: s199 Referral # C18/615 for dredging and reclamation works associated with the Briner Bridge Restoration Project, including the construction of a temporary bridge, within the Coldstream River, Road Reserve adjacent Lot 1 DP 1071695, Coldstream Terrace, Tucabia, Clarence LGA

Reference is made to Roads and Maritime Services' proposal to undertake dredging and reclamation works associated with the above mentioned project forwarded to DPI Fisheries on 13 November 2018.

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 Primary Industries and that the public authority considers any matters concerning the proposed works raised by the Minister.

DPI Fisheries has reviewed the subject project outlined in the application, in particular, the Roads and Maritime Services REF titled *Briner Bridge Upgrade* and dated October 2018.

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. Should Roads and Maritime Services choose not to consider these matters, Roads and Maritime Services should contact DPI Fisheries prior to undertaking the works.



Department of Primary Industries

If you have any queries, please contact Jonathan Yantsch, Fisheries Manager - Aquatic Ecosystems (North Coast) on 0447 537 168 or jonathan.yantsch@dpi.nsw.gov.au.

Yours sincerely

Jonathan Yantsch

Fisheries Manager - Aquatic Ecosystems (North Coast)

Authorised delegate of the Minister for Primary Industries under s199

Cc: Steve Ward, **Clarence District Fisheries Officer**
Brad Harrison, **Fisheries Conservation Compliance Officer**
Rochelle Hicks, **Roads and Maritime Services** (Rochelle.hicks@rms.nsw.gov.au)
Alexander Rosnell, **Roads and Maritime Services**
(alexander.rosnell@rms.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 Lands Act 1989.

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 final built design, should be consistent with the proposal outlined in the s199 referral to DPI Fisheries by Roads and Maritime Services on 13 November 2018. Any proposed changes to the 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 upon 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 into waterways can directly impact on key fish habitats. DPI Fisheries recommend that Roads and Maritime Services ensure 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]) (www.landcom.nsw.gov.au/news/publications-and-programs/the-blue-book.aspx);
 - 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 land¹ and riparian and aquatic vegetation².*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 "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*.

4. The worksite has potential for acid sulfate soils. DPI Fisheries recommend that Roads and Maritime Services ensure that excavated and disturbed soil is to be 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: 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.

Dewatering

5. Dewatering is an activity that can impact the aquatic environment. DPI Fisheries recommend that Roads and Maritime Services ensure that all dewatering at the site is undertaken in accordance with accepted best management practice (i.e. Landcom [2004], *Managing Urban Stormwater: Soils and Construction* [4th Edition]) including the use of mitigation controls such as a sediment fence between the sump water release outlet and the waterway.
Reason – To minimise turbidity impacts from the site and ensure that downstream water quality is not adversely affected.

Timing of works for low flows

6. Appropriately timing the works for periods of low flow can assist erosion and sediment control at the site. DPI Fisheries recommend that Roads and Maritime Services ensure that works are undertaken during periods of low flows in the waterway and when Bureau of Metrological forecast for the Northern Rivers 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

7. Instream works can impact on key fish habitats. DPI Fisheries recommend that Roads and Maritime Services ensure:
 - The avoidance of machinery entering or working from the waterway unless in accordance best management practice;
 - That machinery is appropriately cleaned, degreased and serviced prior to use at the site and entry into the waterway; and
 - That 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.*

Armouring and other rock works

8. Poorly designed or constructed bank protection and other rock works can have an immediate and lasting impact on key fish habitats. DPI Fisheries recommend that Roads and Maritime Services ensure that:
- Only clean rock is used at the site;
 - Rock forming bank armouring and temporary instream hardstand areas is underlaid by geotextile fabric; and
 - All temporary instream structures are completely removed from the waterway immediately after the completion of works.
- Reason – To avoid fines, clay and other sediment un-necessarily entering the waterway and ensure rock armouring and other rock work is constructed using Best Management Practice techniques.*

Avoiding harming marine vegetation

9. 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.*

Post works rehabilitation of site

10. DPI Fisheries recommend that Roads and Maritime Services ensures that the site is 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); and
 - Appropriate maintenance of erosion and sediment control devices until the site has stabilised.
- 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 Roads and Maritime Services. 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 upon the aquatic environment.*



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