



Roads &
Maritime

Charleyong Bridge Submissions report

November 2016

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Prepared by NGH Environmental and Roads and Maritime Services

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Approval and authorisation

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Executive summary

NSW Roads and Maritime Services (Roads and Maritime) propose to replace the Charleyong Bridge over the Mongarlowe River on Main Road 92. The Charleyong Bridge is identified in the Roads and Maritime *Timber Truss Bridge Conservation Strategy* for replacement as it does not meet current loading standards. The bridge cannot be upgraded to meet the loading standards and is expensive to maintain.

The key features of the proposal, as presented in the project Review of Environmental Factors (REF) (NGH Environmental, 2016) include:

- Property acquisition
- Utility adjustments
- Clearing of vegetation
- Earthworks
- Bridge construction (including piling operations within and in close proximity to the river)
- Road pavement construction
- Landscaping
- Decommissioning and demolition of the existing bridge
- Decommissioning and rehabilitation of the existing road.

The replacement of the Charleyong Bridge would allow access improvements; one travel lane in each direction, one metre shoulders, upgraded road and improved safety. The new bridge would also improve the capacity of the NSW freight network as it would be able to carry Higher Mass Limit (HML) vehicles.

The REF was placed on public display between 29 July 2016 and 26 August 2016. A total of 15 responses were received in response to the display of the REF. This REF Submissions Report summarises the issues raised in the submissions and provides responses to each issue.

Of the 15 submissions made, 8 (53%) objected to the proposal, 4 (27%) supported the proposal, 2 (13%) did not offer a position on the proposal. One submission (7%) raised issues which were outside of the scope of the proposal.

The key issues raised by respondents, and Roads and Maritime's responses to these issues, are summarised below.

- ***The historic value and visual amenity of the existing timber truss bridge***

The majority of respondents expressed a wish for the existing timber truss bridge to be retained. The bridge is important to the local community due to its aesthetic characteristics, its historic value, its association with a bygone era and its importance as an example of an Allan Truss bridge.

The RMS *Timber Truss Bridge Conservation Strategy 2012* ('the Strategy') identifies Charleyong Bridge as requiring replacement. The Strategy assessed the 48 timber truss bridges then managed by RMS, and determined those able to constitute a representative sample for future conservation. Twenty-six bridges were chosen to be retained, reflecting the diversity of the original population. Bridges were considered suitable candidates for conservation when they enhanced the representativeness of the population to be retained, and were less susceptible to adverse pressures for change, such as being located on routes with Higher Mass Limits (HML).

Charleyong was not considered a suitable candidate for long-term conservation because it is located on a HML route. Upgrading the bridge to achieve greater strength would not be possible with the existing timber structure. Neither was it considered to have characteristics that were not sufficiently represented by other bridges that were capable of being conserved.

Following construction of the proposal, the existing Charleyong Bridge would revert to Queanbeyan – Palerang Regional Council's care and management. Council has indicated that committing to the continuing maintenance of Charleyong Bridge, averaging \$400,000 per annum over the past decade, would seriously affect its ability to allocate limited maintenance funding towards other bridges within the shire, particularly considering it would not be carrying traffic.

The loss of heritage significance is to be mitigated by the following measures, including:

- An archival recording would be prepared for Charleyong Bridge. This would follow the guidelines for Items of Local Heritage Significance as outlined in the NSW Heritage Branch publication *How to Prepare Archival Records of Heritage Items*
- Utilise elements from the bridge in a display at the Braidwood museum
- Reuse of timber and metal elements, where feasible and practicable, on other Roads and Maritime or Council bridges in accordance with Roads and Maritime practice
- Retention of the stone abutments of the bridge to provide clear evidence of its location, following removal of the road deck
- Prepare a heritage interpretation strategy, in accordance with RMS Heritage Interpretation Guidelines. The Charleyong Bridge is to be included, within the context of the human history of the area and particularly the Nerriga Road / Wool Road route and the Council-owned Allan Truss bridge, Foxlow Bridge.

- ***Potential biodiversity and water quality impacts of the proposal***

The NSW Department of Primary Industries (Fisheries) raised several issues in their submission. Issues related to: the potential for the proposal to adversely impact water quality of the Mongarlowe River, potential impacts on Macquarie Perch habitat in the Mongarlowe River; the potential for reduced water quality and sediment loads to adversely impact the spawning of the Macquarie Perch during the October – December spawning season, and the potential introduction of pathogens to the waterway which could impact native fish populations.

Roads and Maritime included a range of mitigation measures in the REF to minimise impacts to water quality and aquatic fauna during the proposed works. Further consultation has been undertaken with DPI (Fisheries) regarding their submission and a set of revised safeguards incorporating the DPI (Fisheries) issues has been included in Table 5-1.

- ***The provision of stock crossing(s) beneath the proposed new bridge***

One respondent requested that Roads and Maritime investigate the potential to construct an underpass on the eastern side of the Mongarlowe River as well as the proposed western underpass. DPI (Fisheries) raised concerns regarding the potential for the stock underpass to contribute stock excrement and sediment into the waterway.

Roads and Maritime are considering an additional underpass on the eastern side of the Mongarlowe River. An eastern underpass will be investigated during detailed design phase of the project. The underpass is proposed to be included, subject to development of a feasible and practicable design. Roads and Maritime will consult with DPI (Fisheries) regarding the design of the stock underpass and would incorporate design features to address build-up of sediment and excrement from stock, to address pollution into the Mongarlowe River.

- ***The cost, safety and efficiency of the proposed works***

Respondents asked about costs of previous maintenance works and costs to repair, leave in place and/or replace the existing bridge. Respondents asked whether all options had been considered to retain the bridge, and commented on the load bearing capacity of the existing bridge and questioned the need to provide for HML vehicles.

The route on which the Charleyong Bridge is situated is required to meet HML vehicle standards. The Charleyong Bridge cannot be upgraded to meet HML standards. Timber truss bridges have been proven capable of being strengthened and upgraded to carry T44 standard loads, being 42.5 tonnes equivalent. This requires the introduction of modern materials. Timber truss bridges cannot be strengthened beyond this due to the inherent limitations of timber construction. Current strengthening works are temporary only and the bridge would eventually require complete replacement of all timber elements.

Following construction of the proposal, the existing bridge would revert to Council ownership and management. Continued conservation would require considerable sums in perpetuity, as well as the availability of skilled bridge maintenance crews. Providing these would compromise Council's limited resources and divert necessary funding from other infrastructure asset maintenance.

Gradual deterioration of the bridge would represent a safety risk to vehicles and pedestrian users, and would constitute an environmental risk to the river.

- ***The recreational and tourism values associated with the existing timber truss bridge***

Respondents commented that the Charleyong Bridge has local community, social and aesthetic significance and that the bridge is representative of values shared by the local community. Respondents felt that the bridge adds value to the local area as a site for travellers/tourists to stop and enjoy the river and suggested that the bridge and recreation reserve could be used as a traveller's rest area.

The *Timber Truss Bridge Strategy* examined social and aesthetic significance in identifying which bridges were candidates for retention. All bridges were considered to have general social value, but Charleyong bridge was noted as having only a modest user community due to its remote location. Its aesthetic value is not disputed, but the Nerriga Road as a historic road is not considered to be reliant on the bridge to provide an attractive resource for tourists and recreational use.

The proposed works would not preclude the use of the recreation reserve. The use and promotion of the recreational ground to the north-west of the study area is outside of the scope of Roads and Maritime responsibilities however, Roads and Maritime proposes to discuss the promotion of the reserve with Council. Roads and Maritime also proposes to install interpretation signage at a suitable location, as well as retaining the stone abutments as a marker of the original bridge location.

- ***Support for the proposed road realignment and the proposed new bridge***

One respondent supported the proposal for the construction of a new concrete bridge and supported the removal of the timber existing bridge. Another respondent was supportive of the proposal to construct a bridge on an improved realignment of Nerriga Road.

Roads and Maritime consider the proposed concrete design is best able to meet the structural requirements as a concrete structure would offer ease of installation and durability. The improved realignment would improve the safety and efficiency of Nerriga Road in this location.

- ***Additional issues which are outside the scope of the REF assessment***

Issues outside of scope related to upgrades of other roads in the region, the advertising of Service NSW Licencing Service in the Braidwood Courthouse and the implications of the proposal in relation to the Welcome Reef Dam project.

Roads and Maritime have provided feedback to Service NSW, who have since provided information to the respondent that raised this issue. Roads and Maritime consider that regardless of any plans for the Welcome Reef Dam, the Charleyong Bridge proposal would provide benefits in efficiency and road safety.

No changes have been made to the proposal since the public exhibition of the REF. No additional assessments were carried out in preparing this Submissions report. Following consideration of the matters raised in the public submissions and consultation with agencies, the environmental safeguards have also been revised to include some additional measures. An updated consolidated set of environmental safeguards are shown in Table 5-1 of this report.

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1 Introduction and background

1.1 The proposal

Roads and Maritime Services (Roads and Maritime) propose to replace the Charleyong Bridge over the Mongarlowe River on Main Road 92. The proposed work would include construction of a new bridge, removal of the old bridge and about 1.4 kilometres of approach roadworks, between 94.9 kilometres to 96.3 kilometres west of Nowra. Figure 1-1 shows the regional location of the proposal and Figure 1-2 shows the proposal footprint.

The proposed works would involve:

- Property acquisition
- Utility adjustments
- Vegetation clearing
- Earthworks
- Bridge construction (utilising a temporary working platform and piling operations within the Mongarlowe River)
- Road surface construction
- Landscaping
- Decommissioning and demolition of the existing bridge (utilising a temporary working platform within the Mongarlowe River)
- Decommissioning and rehabilitation of the existing road surface.

Design features of the proposal include:

- Realignment of the approaches to the bridge
- Construction of a stock underpass at the western end of the new bridge.

A more detailed description of the Charleyong Bridge Replacement proposal is found in the Charleyong Bridge Replacement Review of Environmental Factors (REF), prepared by NGH Environmental in July 2016. The REF can be found on the project website:

<http://www.rms.nsw.gov.au/projects/south-coast/charleyong-bridge/project-documents.html>



 Proposal

0 2.5 5 10 Kilometres

Ref: 6727 1.1 v1
Author: JB



Notes:

- Proposal data courtesy of Roads and Maritime, received 2016
- Base map Copyright © Esri and its data suppliers.

www.nghenvironmental.com.au

Figure 1-1 Regional location map of the proposal site

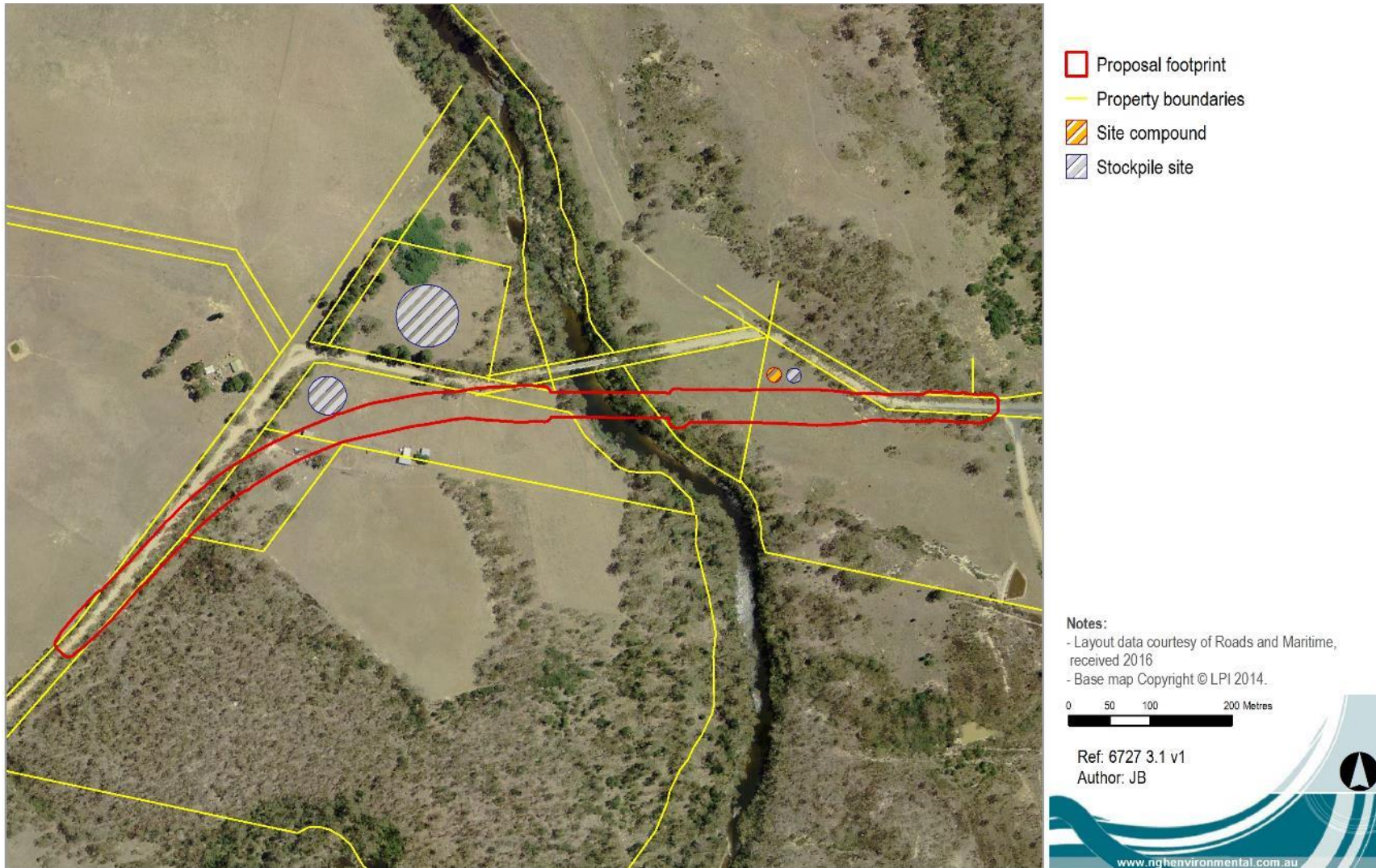


Figure 1-2 Proposal footprint and indicative proposed stockpile/compound sites.

1.2 REF display

An REF was prepared to assess the environmental impacts of the proposed works. The REF was publicly displayed for 29 days between 29 July 2016 and 26 August 2016 at five locations, as detailed in Table 1.1. A drop in session was held at Braidwood Farmer's Market on August 6th 2016. The REF was placed on the Roads and Maritime project website and made available for download. The display locations and website link were advertised in:

- Queanbeyan – Palerang Regional Council monthly newsletter
- The Braidwood Times – Administrator's Column and Council's advertising page
- Queanbeyan-Palerang Regional Council social media channel - Facebook

In addition to the above public display, an invitation to comment and copy of the REF was sent directly to several identified stakeholders including:

- Department of Primary Industries (Fisheries)
- The Braidwood Historical Society
- The Office of Environment and Heritage (Heritage Division)
- Water NSW.

A formal letter was provided to the adjacent private property landowner prior to the consultation period.

Table 1.1: Display locations

Location	Address
Nerriga Hotel	Lot 5 Nerriga Road
Queanbeyan-Palerang Regional Council - Bungendore Office	10 Majara Street, Bungendore
Queanbeyan-Palerang Regional Council - Braidwood Office	144 Wallace Street, Braidwood
Bungendore Library	Gibraltar Street, Bungendore
Braidwood Library	Park Ln, Braidwood

1.3 Purpose of the report

This Submissions report relates to the REF prepared for the Charleyong Bridge Replacement 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 the issues raised and provides responses to each issue (Chapter 2).

No changes have been made to the proposal since the public exhibition of the REF. No additional assessments were carried out in preparing this Submissions report. Following consideration of the matters raised in the public submissions and consultation with agencies, the environmental safeguards have also been revised to include some additional measures. An updated consolidated set of environmental safeguards are shown in red in Table 5-1 of this report.

2 Response to issues

Roads and Maritime received 15 submissions, accepted up until 26 August 2016. Table 2.1 lists the respondents and each respondent's allocated submission number. The table indicates the key issues from each submission. These are addressed in Sections 2.2 - 2.9 of this report.

Table 2.1: Respondents

Respondent	Submission No.	Issues raised
Individual	1	Concerns about historic value and visual amenity Concerns about cost and safety Concerns about recreational values and tourism
Individual	2	Supportive of bridge replacement and demolition of existing bridge Issues outside scope
Agency	3	Concerns about biodiversity and water quality impacts Supportive of bridge replacement
Individual	4	Concerns about historic value and visual amenity Concerns about recreational values and tourism
Individual	5	Concerns about historic value and visual amenity Concerns about recreational values and tourism Concerns about cost and safety
Individual	6	Concerns about recreational values and tourism Concerns about historic value and visual amenity
Individual	7	Concerns about historic value and visual amenity Concerns about cost and safety Concerns about recreational values and tourism Issues outside of scope
Individual	8	Concerns about historic value and visual amenity Concerns about cost and safety Concerns about recreational values and tourism Issues outside of scope
Individual	9	Supportive of the proposed realignment of Nerriga road and proposed new bridge Concerns about historic value and visual amenity Concerns about cost and safety Concerns about recreational values and tourism
Agency	10	Supportive of the proposal
Agency	11	Supportive of the proposal
Individual	12	Concerns about stock underpass
Agency	13	Outside of scope
Community group	14	Concerns about historic value and visual amenity
Agency	15	Concerns about cost and safety

2.1 Overview of issues raised

A total of 15 submissions were received in response to the display of the review of environmental factors. This included submissions from four government agencies, nine from individual members of the public and one from a community group.

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

Of the 15 submissions made, 8 (53%) objected to the proposal, 4 (27%) supported the proposal, 2 (13%) did not offer a position on the proposal and 1 (7%) raised issues which were outside of the scope.

2.1.1 Agency responses

Agency consultation and issues are outlined specifically below. Responses are incorporated into sections 2.2 – 2.8, where required.

Queanbeyan-Palerang Regional Council

Key comments in Queanbeyan-Palerang Regional Council's submission included:

- Retention of the existing structure would likely result in significant cost and safety issues
- Council does not currently have an allocated budget for the maintenance of structures such as the Charleyong timber truss bridge, and is unlikely to have a budget for this in the foreseeable future
- Council does not currently have a budget for the upgrade and/or maintenance of sporting facilities in this area
- Council also notes that the cricket pitch appears to be located on land owned by Water NSW.

Roads and Maritime held a briefing meeting with Queanbeyan-Palerang Regional Council on Tuesday 16 August 2016. The meeting was to update the Council on the project's status. Senior Management staff from Council attended the meeting. The meeting included discussions about the REF as well as issues regarding future asset maintenance.

Water NSW

Water NSW have agreed to the land acquisition arrangements which will essentially see a swap of land between Water NSW and Roads and Maritime. Water NSW have requested that the old road corridor be rehabilitated with topsoil from the new road corridor.

Department of Primary Industries (Fisheries)

Fisheries raised several issues specific to protecting the waterway and particularly the Macquarie Perch, known to occur in the Mongarlowe River. Key comments included:

- Works must avoid the October – December spawning period for Macquarie Perch
- Native fish populations must be protected from the spread of pathogens, including the Epizootic Haematopoietic Necrosis Virus (EHNV)
- The stock underpass must be designed to reduce sediment and excrement input into the river
- Further details of any temporary rock working platform would need be provided if required, for approval
- Final rehabilitation details for the waterway are required to be provided for approval.

A set of recommendations were provided by DPI (Fisheries) to manage these impacts. Further consultation was then undertaken with DPI (Fisheries) regarding these recommendations. As a result, the recommendations have been modified slightly. Specifically:

- Roads and Maritime would ensure that no high risk sediment producing activities (such as pier installation or abutment earthworks) are undertaken during the October – December spawning period.
- Some works within 40 meters of the waterway may be required but would be undertaken with rigorous sediment erosion controls and in consultation with DPI (Fisheries).

The modified recommendations are included in Section 5.2 revised safeguards, which Roads and Maritime propose to implement as part of the project.

Office of Environment and Heritage

The NSW Office of Environment and Heritage (Heritage Division) stated that bridge is not listed on the State Heritage Register, however, it is listed on the section 170 register and the Palerang LEP. The Heritage Division had no additional feedback.

2.1.2 Individuals and community group responses

The main issues raised by the public included:

- The majority of respondents expressed a preference the bridge to be retained and not demolished
- Respondents stated that the bridge is valued as an important historic heritage item and is an example of the Allan Truss bridge design technique
- Respondents expressed that the character of the bridge contributes to the visual appeal of the locality
- The bridge is valued for its contribution to local tourism
- The bridge and the associated recreation area is valued by the community and represents an opportunity to enhance tourism / recreation values of the area
- A stock underpass on the eastern (as well as the proposed western) side of the Mongarlowe River would be supported.

2.2 Historic value and visual amenity

Submission number(s)

1, 4, 5, 6, 7, 8, 9 (refer Table 2-1).

Issue description

- Built in 1901, the existing bridge on the Old Wool Road linked Braidwood district to parts of Jervis Bay
- Beautiful and rare truss bridge example
- Relates to bygone era
- Of value to pass onto next generation
- Provides important character to the local area, important to the local community
- Local residents have chosen to live in the area for its historic and aesthetic characteristics, which are enhanced by the heritage listed timber truss bridge
- Significant aesthetic landmark between the Charleyong and Tomboye areas
- Respondents expressed a wish for the existing bridge to be retained.

Response

The Charleyong Bridge is listed on the Roads and Maritime's section 170 Heritage and conservation register and is assessed as having local significance. The Charleyong Bridge over the Mongarlowe River is also listed as a Heritage item under Schedule 5 of the Palerang LEP 2014. Roads and Maritime acknowledge that Charleyong Bridge has historically played an important role in the expansion of the NSW road network. The bridge has additional historical significance as it is associated with the Wool Road, local gold fields and as a historically maintained crossing point. It is also likely to have played a major role in the establishment and development of the settlement of Marlowe.

Seven respondents raised the historical significance and historic value of the existing bridge. Its character contributes to the visual appeal of the locality and is of importance to the local community. Several submissions mentioned the value of retaining the bridge, either as a pedestrian only bridge or with no access, to be managed as a ruin (a decommissioned bridge, allowed to deteriorate). This would retain the historic character in the locality.

The RMS *Timber Truss Bridge Conservation Strategy* (2012) identifies Charleyong Bridge as requiring replacement. The Strategy assessed the 48 timber truss bridges then managed by RMS, and determined those able to constitute a representative sample for future conservation. Twenty-six bridges were chosen, reflecting the diversity of the original population. Bridges were considered suitable candidates for conservation when they enhanced the representativeness of the population to be retained, and were less susceptible to adverse pressures for change, such as being located on routes with higher mass limits.

Charleyong was not considered a suitable candidate for long-term conservation because it is located on a HML route. Upgrading the bridge to achieve greater strength would not be possible with the existing timber structure. Neither was it considered to have characteristics that were not sufficiently represented by other bridges that were capable of being conserved. Neither does Charleyong Bridge have high or exceptional significance for specific elements that demands their retention. The more significant elements of the bridge are the truss spans and associated timbers however, these are not considered to be of high or exceptional significance compared to other timber truss bridges that will be retained under the Strategy.

The cumulative effect of the proposed demolition of Charleyong Bridge on the remaining Allan truss bridges extant in the state is considered to be acceptable. Eleven Allan truss bridges across NSW will be retained as bridges on the state road network as part of the Roads and Maritime *Timber Truss Bridge Strategy* (2012) and will therefore receive ongoing maintenance.

Roads and Maritime also considers that the Charleyong Bridge must be replaced for road safety reasons. The section of MR92 near Charleyong Bridge has a crash history. Retaining the existing bridge would also retain the existing horizontal road alignment, increasing road safety risks. The safety issues are related to the existing substandard approach curves combined with the unsealed road surface.

Roads and Maritime consider that, once superseded, the existing bridge cannot be retained along with the new structure for the following reasons:

- Following construction of the proposal, the existing Charleyong bridge will revert to Council's care and management. Council has indicated that committing to the continuing maintenance of Charleyong bridge, averaging \$400,000 per annum over the past decade, would seriously affect its ability to allocate limited maintenance funding towards other bridges within the shire, particularly considering it would not be carrying traffic.
- The maintenance requirements for the bridge would not significantly differ if it were dedicated for pedestrian or cyclist use. There is a risk to the waterway if the bridge is retained but cannot be effectively maintained.
- There is a negligible local community presence to justify the dedication of the bridge for non-vehicle uses.

The loss of heritage significance is to be mitigated by the following measures, including:

- An archival recording would be prepared for Charleyong Bridge. This would follow the guidelines for Items of Local Heritage Significance as outlined in the NSW Heritage Branch publication *How to Prepare Archival Records of Heritage Items*
- Utilise elements from the bridge in a display at the Braidwood museum
- Reuse of timber and metal elements, where feasible and practicable, on other Roads and Maritime or Council bridges in accordance with Roads and Maritime practice
- Retention of the stone abutments of the bridge to provide clear evidence of its location, following removal of the road deck
- Prepare a heritage interpretation strategy in accordance with RMS Heritage Interpretation Guidelines. The Charleyong Bridge is to be included, within the context of the human history of the area and particularly the Nerriga Road / Wool Road route and the Council-owned Allan Truss bridge, Foxlow Bridge.

2.3 Biodiversity and water quality impacts

Submission number(s)

3 (refer Table 2-1).

Issue description

- The Department of Primary Industries (Fisheries) raised concerns about the potential for the proposal to impact on Macquarie Perch habitat within the Mongarlowe River
- The proposal has the potential to impact water quality of the Mongarlowe River, which could potentially impact spawning of the Macquarie Perch. Spawning is particularly susceptible to sediment. Spawning is known to occur between the bridge and the confluence of the Mongarlowe River with the Shoalhaven River. The Macquarie Perch spawning period is from October to December
- The introduction of Epizootic Haematopoietic Necrosis Virus (EHNV) to the native fish populations (including Macquarie Perch) of the Mongarlowe River has not been discussed in the REF. Native fish populations must be protected from the spread of pathogens through the implementation of appropriate mitigation measures
- DPI (Fisheries) raised concerns about the construction of temporary working platforms within the Mongarlowe River
- Works within the waterway or involving disturbance of soil, removal of vegetation within 40 meters of the waterway or that pose of risk of creating sediment input into the waterway, are not to be undertaken between 1 October and 30 December
- Water NSW requested that the old road corridor be rehabilitated with topsoil from the new road corridor.

Response

The Macquarie Perch is known to occur in the Mongarlowe River. Spawning of the Macquarie Perch is known to occur between the bridge and the confluence of the Mongarlowe River with the Shoalhaven River. Section 6.2.2 of the REF addresses potential water quality impacts that may result from construction and operation of the project. Section 6.3.3 of the REF addressed potential biodiversity impacts that may result from the construction and operation of the project, including impacts to aquatic habitat and threatened aquatic fauna species.

Temporary working platforms would be constructed within the Mongarlowe River to enable construction of the new bridge piers in the river. A temporary working platform would also be required at the location of the existing timber bridge in order to demolish and remove the structure. Roads and Maritime would consult with DPI (Fisheries) regarding the proposed temporary working platforms. In accordance with Section 199 of *Fisheries Management Act 1994*, Roads and Maritime would provide written notification to the Minister prior to the carrying out or authorising of any proposed dredging and reclamation works (including the temporary working platforms) and consider any matters raised by the Minister within 21 days after giving the notice.

A range of mitigation measures have been developed and included in the REF to minimise impacts to water quality during construction of the new bridge and approaches and demolition of the existing bridge. These include preparation of a Soil and Water Management Plan, a site specific Erosion and Sediment Control Plan, requirements for a rehabilitation plan and measures relating to minimisation of disturbance particularly within the riparian areas (ie. within 40 metres from the highest bank on both sides of the Mongarlowe River).

A set of recommendations were provided by DPI (Fisheries) to manage impacts to water quality and biodiversity. Following further consultation with DPI (Fisheries) regarding their recommendations, a set of revised safeguards are now included in Section 5.2 of this report, which Roads and Maritime propose to implement as part of the proposal. Roads and Maritime would ensure that no high risk sediment producing activities (such as pier installation, abutment earthworks or temporary work platform construction) are undertaken during the October – December spawning period. Some works within 40m of the waterway may be undertaken but would be undertaken with the implementation of rigorous sediment erosion controls and in consultation with DPI (Fisheries).

Epizootic Haematopoietic Necrosis Virus (EHNV) is an Australian iridovirus that is known to affect introduced wild populations of Redfin Perch and farmed Rainbow Trout. EHNV also has the potential to negatively impact several native fish species. A range of native fish species, including the Macquarie Perch, have shown susceptibility to EHNV infection in laboratory trials involving water borne exposure (NSW DPI, 2016).

Activities that can increase the risk of spreading this disease between NSW waterways include movement of equipment from one waterway to another. Strict pathogen hygiene measures would be implemented as part of the project and would be submitted to DPI (Fisheries) for comment prior to the commencement of works.

Roads and Maritime proposed in the REF to rehabilitate the decommissioned road formation. The rehabilitation details will be forwarded to Fisheries and Water NSW prior to construction. It is clarified here that this does not include disturbing or rehabilitating existing road batters and shoulders which are currently stable and have been colonised by surrounding ground covers.

2.4 Stock crossing

Submission number(s)

3, 12 (refer Table 2-1).

Issue description

- One respondent stated that they move stock underneath the existing bridge on the eastern side of the Mongarlowe River. The respondent requested that Roads and Maritime investigate the potential to construct an underpass on the eastern side of the Mongarlowe River as well as the proposed western underpass

- DPI (Fisheries) require that the stock underpass be designed to prevent movement of sediment and excrement from stock utilising the underpass into the waterway. Detailed plans of the final bridge design including the stock underpass are to be submitted to DPI Fisheries for approval.

Response

Roads and Maritime propose to construct a stock access under the bridge on the western side of the Mongarlowe River. An additional eastern underpass is currently being considered by Roads and Maritime, subsequent to the submissions. An eastern underpass will be investigated during detailed design phase of the project. The underpass is proposed to be included, subject to the design being feasible and practicable. No additional environmental impacts have been identified.

The stock underpass(es) would incorporate design features to address the build-up of sediment and excrement from stock, so that it does not become a source of pollution into the Mongarlowe River. Roads and Maritime would consult with DPI (Fisheries) regarding the design of the stock underpass(es) and the final bridge design.

2.5 Cost, safety and efficiency

Submission number(s)

1, 5, 6, 7, 8, 9 (refer Table 2-1).

Issue description

- Some respondents asked about the costs of previous maintenance works on the existing bridge
- Some respondents asked about the costs to repair, leave in place and/or replace the existing bridge
- Some respondents asked whether all options have been considered to retain the bridge
- Some respondents commented on the load bearing capacity of the existing bridge and questioned the need to provide for HML vehicles.

Response

As a timber truss bridge, Charleyong Bridge requires regular maintenance. In addition, there is a need to undertake a major refurbishment every 20 or so years, in which all timber elements would be replaced.

Ongoing maintenance, regardless of future use, would be required to manage termite impacts, sediment and debris build-up on the deck, repainting to protect timber and steel elements and similar works. Ongoing timber condition investigations would still be required to identify the need for timber replacement where rot or splitting occurs. As the work on timber bridges is predominately skilled manual labour, maintenance costs are relatively high. Annual maintenance on the existing bridge have been in the order of \$400,000 per annum over the last ten years, which includes the major works undertaken in 2008 / 2009 / 2010 to prop the existing timber piers to avoid failure.

Strengthening with the inclusion of modern materials has been undertaken at other RMS timber truss bridges. This process does not strengthen bridges beyond the 42.5 tonne general access limit. Charleyong is identified as required to carry traffic in excess of this weight, and if strengthened would not meet this road operability requirement.

Retention of the bridge in whole or in part as a non-accessible landscape element is not favoured as it still creates an ongoing maintenance liability as well as potentially creating new risks if bridge sections remain over a waterway, or are placed within a park or public area. Timber truss bridges

require major routine maintenance, whether under traffic load or not, therefore removing traffic from a bridge does not necessarily reduce the maintenance requirements significantly.

Queanbeyan-Palerang Regional Council (formerly Palerang Shire Council) is reluctant to take on the maintenance responsibility for the existing bridge, should Roads and Maritime proceed with replacement. Retaining the existing bridge and handing over management to a new owner for an alternative use is not considered feasible due to the isolated location of the site. Council note that they do not currently have an allocated budget for the maintenance of structures such as the timber truss bridge and would be unlikely to in the foreseeable future. The Charleyong Bridge cannot be retained as an unmaintained structure. Such an approach would provide a high risk of eventual collapse into the waterway.

The replacement project is expected to cost about \$20 million, and forms part of the NSW Government under the Bridges for the Bush initiative. This figure includes costs associated with the removal of the existing bridge.

2.6 Recreation, community and tourism

Submission number(s)

1, 4, 5, 6, 7, 8, 9 (refer Table 2-1).

Issue description

- Respondents comment that the Charleyong Bridge has local community, social and aesthetic significance
- Respondents said that the Charleyong Bridge is generally representative of values shared by local community, and removal of the bridge may impact community identity
- Respondents commented that the bridge adds value as a spot for travellers/tourists to stop and enjoy the river and recreational area
- Some respondents suggested that the bridge and recreation area would make a perfect travellers rest area
- One respondent suggested that the bridge could be valued for functions and special occasions (e.g. weddings).

Response

While local and regional tourism strategies are outside Roads and Maritime scope, it is acknowledged that some bridges do contribute to local tourism.

Development of the Strategy (2012) included a public consultation process to seek further views from the community as to the social values of the bridges. The vast majority of the responses received related to individual bridges from members of nearby communities. The public consultation process saw one submission received in relation to Charleyong Bridge, which was in support of the retention of the bridge. Charleyong Bridge was identified for replacement in the Revised Timber Truss Bridge Strategy for a variety of reasons relating to network access requirements and safety (outlined in Section 2.6).

Roads and Maritime notes that the proposed works do not preclude any future community use of the recreation ground. The proposal would not impact existing public access to this area.

The use and promotion of the recreational ground to the north west of the study area is outside of the scope of Roads and Maritime responsibilities. Council have indicated that they do not currently have a budget for the upgrade and/or maintenance of sporting facilities in this area. Council have also noted that the old cricket pitch appears to be located on land owned by Water NSW.

Roads and Maritime propose to:

- Discuss the promotion of the Charleyong recreation ground with Council
- Prepare a heritage interpretation strategy in accordance with RMS Heritage Interpretation Guidelines. The Charleyong Bridge is to be included, within the context of the human history of the area and particularly the Nerriga Road / Wool Road route and the Council-owned Allan Truss bridge, Foxlow Bridge.

2.7 Supportive

Submission number(s)

2, 3, 10, 11 (refer Table 2-1).

Issue description

- One respondent was happy to hear the new structure would be concrete
- One respondent was happy to hear the existing bridge would be removed
- One respondent was supportive of the proposal to construct a new bridge on an improved realignment of Nerriga Road (although this respondent also expressed an opposition to the demolition of the existing timber truss bridge).

Response

Roads and Maritime consider the proposed concrete design is best able to meet the structural requirements. In comparison to steel or timber, a concrete structure offers the advantages of ease of installation and durability. The improved road alignment would improve the safety and efficiency of the Nerriga Road in this location.

2.8 Issues outside of scope

Submission number(s)

2, 7, 13 (refer Table 2-1).

Issue description

- One respondent noted that advertising of the Service NSW Licensing Services in the Braidwood Courthouse could be improved
- One respondent asked whether the upgrade of the bridge meant that Welcome Reef Dam was 'dead'
- One respondent asked whether Roads and Maritime would upgrade the Durran Durra range section of MR92
- One respondent commented that there is a need for pothole and surface fixing on Wallace Street (Kings Highway) in Braidwood.

Response

These matters are outside the scope of the Charleyong Bridge replacement project.

Service NSW delivers more than 800 transactions – including driver licences, birth certificates, Seniors Cards and Fair Trading licences through one digital service, one phone number and a network of one-stop shops. While outside the scope of this assessment, this feedback regarding

advertising its services has been provided by the Roads and Maritime project team to Service NSW, who have since provided information to the respondent.

It is understood that the plans for Welcome Reef Dam have been deferred indefinitely (Water NSW, 2016). It is considered that the Charleyong Bridge proposal would have benefits in efficiency and road safety, regardless of any future plans for Welcome Reef Dam.

Queanbeyan-Palerang Regional Council have advised that Council has a long term objective to provide a sealed road between Braidwood and Nerriga. Council has commenced preliminary design for the Durran Durra section of Nerriga Road however, no funding for this section of the road has so far been allocated at this point in time.

Council is actively seeking funding from various State and Commonwealth grant programs to fast-track this upgrade, and will continue to lobby State and Commonwealth governments for additional funding on behalf of residents in the shire.

Roads and Maritime understand that Council are aware of maintenance requirements on Wallace Street in Braidwood.

3 Environmental management

The REF for the Charleyong Bridge Replacement 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 submissions, the safeguard and management measures have been revised.

A range of additional safeguards and management measures regarding water quality and biodiversity impacts have been proposed, following consultation with DPI (Fisheries). Key additional measures include a commitment to avoiding any in-stream works during the October to December spawning period of the Macquarie Perch and requirements to provide DPI (Fisheries) with the project detailed design plans, SWMP, ESCP, EWMS and Rehabilitation Plans prior to the commencement of the works. These measures have been discussed in section 2.3 and are included in full in Table 5.1.

Should the proposal proceed, environmental management will be guided by the framework and measures outlined below.

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

The PEMP and CEMP will be prepared prior to construction of the proposal and must be reviewed and certified by environment staff, Southern Region, prior to the commencement of any on-site works. The CEMP will be a working document, subject to ongoing change and updated as necessary to respond to specific requirements. The PEMP and CEMP would be developed in accordance with the specifications set out in the QA Specification G36 – Environmental Protection (Management System), QA Specification G38 – Soil and Water Management (Soil and Water Plan) and the QA Specification G40 – Clearing and Grubbing.

3.2 Summary of safeguards and management measures

The review of environmental factors for the Charleyong Bridge Replacement identified a range of environmental outcomes and management measures that would be required to avoid or reduce the environmental impacts.

After consideration of the issues raised in the public submissions, the environmental management measures for the project (refer to Chapter 7 of the REF) have been revised. Should the project proceed, the environmental management measures in Table 3.1 will guide the subsequent phases of the Charleyong Bridge Replacement. Additional and/or modified environmental safeguards and management measures to those presented in the REF have been underlined.

Table 3.1: Summary of environmental safeguards and management measures

No.	Impact	Environmental safeguards	Responsibility	Timing
1	Landform and soil disturbance, erosion	<ul style="list-style-type: none"> • Design bridge abutments, piers and road approach batters, culverts to ensure stable landforms are achieved • Works must be undertaken in accordance with Roads and Maritime specifications: <ul style="list-style-type: none"> ○ <i>G38 Soil and Water Management (Soil and Water Management Plan)</i> ○ <i>R44 Earthworks (Cut, Fill, Imported Fill and Imported Selected Material)</i> ○ <i>R50 Stabilisation of Earthworks.</i> • A Soil and Water Management Plan would be prepared in accordance with G38 and implemented as part of the CEMP. The Plan will identify all reasonably foreseeable risks relating to soil erosion and water pollution associated with undertaking the activity, and describe how these risks will be managed and minimised during construction • A site specific Erosion and Sediment Control Plan (ESCP) would be developed and include the following: <ul style="list-style-type: none"> ○ Steps to prevent the mixing of different soils (eg. Subsoils and topsoils) and steps to ensure that they are replaced in their natural configuration during rehabilitation ○ Measures to minimise the area of disturbance and the amount of disturbance (eg. Clearly defining stabilised access points, clearly defining parking and laydown areas) in areas that will eventually be rehabilitation and revegetated. <p><u>The ESCP would be forwarded to DPI (Fisheries) prior to the commencement of the works.</u></p> • Employees, contractors and subcontractors will be made aware of the requirements of the SWMP and the Erosion and Sediment Control Plan during site inductions/training 	Roads and Maritime	Pre-construction & Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		<ul style="list-style-type: none"> • Erosion and sediment controls would be installed prior to construction commencing, and progressively throughout the works, to minimise risks associated with erosion and sedimentation. These controls would include, but not be limited to: <ul style="list-style-type: none"> ○ Sediment management devices, such as fencing, hay bales or sand bags ○ Measures to divert or capture and filter water prior to discharge, such as drainage channels and first flush and sediment basins ○ Scour protection and energy dissipaters at locations of high erosion risk ○ Installation of measures at work entry and exit points to minimise movement of material onto adjoining roads, such as rumble grids or wheel wash bays ○ Appropriate location and storage of construction materials, fuels and chemicals, including bunding where appropriate. • Erosion and sediment controls would be maintained regularly until the proposed works are completed (including the removal of any built up soils and materials) • Erosion and sediment controls must be regularly inspected particularly following rainfall • A register of inspection and maintenance of erosion and sediment controls would be maintained • Stockpiles will be designed, established, operated and decommissioned in accordance with the RTA <i>Stockpile Site Management Guideline 2015</i> • Site selection for stockpiles and other ancillary facilities will maximise use of: <ul style="list-style-type: none"> ○ On an existing hard stand area, requiring no native vegetation clearing ○ At least 40 metres away from the nearest waterway ○ At least 100 metres distant from residential dwellings and other land uses that may be sensitive to noise 		

No.	Impact	Environmental safeguards	Responsibility	Timing
		<ul style="list-style-type: none"> ○ On relatively level ground ○ Outside the 1 in 10 year Average Recurrence Interval (ARI) floodplain. ● Set out limit of works (including ancillary areas and vehicle parking) in accordance with QA Specification G40 – Clearing and Grubbing and G36 (water course buffers). Declare all other areas ‘no-go’, to be protected from all impacts. 		
2	Rehabilitation of disturbed areas	<ul style="list-style-type: none"> ● A rehabilitation plan would be prepared for all areas disturbed by construction works proposal and would include the following: <ul style="list-style-type: none"> ○ Ensure areas disturbed during construction (including laydown areas and ancillary sites) are stabilised progressively during construction and restored back to original condition or re-vegetated with appropriate species (native in native dominated areas) as soon as practical ○ For riparian areas (ie. within 40 metres from the highest bank on both sides of the Mongarlowe River), meets the requirements of the Guidelines for Controlled Activities on Waterfront Land; Guidelines for Riparian Corridors, and any additional comments received from NSW Office of Water and Water NSW. This may include fencing stock out of riparian areas being rehabilitated ○ Include monitoring to meet clear targets, regarding vegetation establishment and stabilisation of bare areas of soil. <p><u>The rehabilitation plan would be provided to DPI (Fisheries) prior to the commencement of the works.</u></p>	Contractor	Pre-construction
3	Discovery of contaminated soil	<ul style="list-style-type: none"> ● 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 	Contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		Roads and Maritime Environment Manager and/or EPA.		
4	Soil contamination resulting from accidental spills	<ul style="list-style-type: none"> 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) Machinery must be regularly checked and serviced to manufacturer's standards to ensure there is no oil, fuel or other liquids leaking from the machinery, including daily checks of machinery and equipment to be used for bridge works Spill kits are to be kept on all machinery with operators trained in their use Spill kits are to be kept on site at all times (eg. at site compound) with their location clearly signed and communicated to site personnel Response to spills to be discussed during toolbox meetings. 	Contractor	Pre-construction & Construction
5	Erosion and subsequent sedimentation of waterways	<ul style="list-style-type: none"> Procedures for testing, treatment and discharge of sediment-laden construction waste water (eg. water captured in sediment devices) must be as described in the SWMP Any dewatering activities will be undertaken in accordance with the RTA Technical Guideline: Environmental management of construction site dewatering in a manner that prevents pollution of waters. 	Contractor	Pre-construction & Construction
6	Working within and adjacent to the waterway	<ul style="list-style-type: none"> Environmental Work Method Statements (EWMS) would be prepared for high risk activities within waterways (pier construction, bridge assembly, bridge demolition and scour protection works). The EWMS would include, but not be limited to, the following and be reviewed by Roads and Maritime's Local Environmental Officer 	Roads and Maritime and Contractor	Pre-construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		<p>prior to commencement of works:</p> <ul style="list-style-type: none"> ○ Description of works/activities including machinery ○ Outline of the sequence of the works/activities ○ An environmental risk assessment to determine potential risks to discrete work elements or activities likely to affect the environment ○ A map indicating the locations of controls to be put in place ○ Evaluation of methods to reduce environmental risks ○ Mitigation measures to reduce environmental risks (including those listed in this assessment) ○ A process for assessing the performance of the implemented mitigation measures ○ A process for resolving environmental issues and conflicts. <p><u>EWMS would be forwarded to DPI (Fisheries) prior to the commencement of works.</u></p> <ul style="list-style-type: none"> ● The use of a silt curtain should be considered to minimise potential downstream impacts during construction of the new bridge, and demolition of the existing bridge and scour protection works. The silt curtain should be used in such a way as not to restrict fish passage. 		
7	Degradation of waterway from spills	<ul style="list-style-type: none"> ● A method for emergency installation of a spill boom within the river must be developed prior to the bridge works ● All re-fuelling of vehicles and equipment would be undertaken in an impervious bunded area at the compound site. The location of the refuelling bund would be located 40 metres from the top of the bank of the Mongarlowe River and away from the unnamed tributary ● Concrete washout shall be carried out offsite or in concrete washout areas described in the SWMP ● In the event of a spill into or contamination of the waterway, works would cease and a Roads and Maritime Environmental Officer be contacted immediately. Any potential contamination of the waterway would be reported to the EPA immediately. 	Contractor	Pre-construction & Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
8	Water pollution resulting from bridge demolition	<ul style="list-style-type: none"> All debris created by the demolition work is to be fully contained by use of drop nets and shade cloth to prevent spreading of debris entering the waterway. 	Contractor	Construction (demolition)
9	Flooding impacts	<ul style="list-style-type: none"> A Flood Contingency Plan would be prepared to identify any potential flood threats and the evacuation procedure for dispersible materials, hazardous materials and equipment containing hazardous or dispersible materials. The Flood Contingency Plan would include: <ul style="list-style-type: none"> A number of workers required to implement the Plan and their availability to undertake the Plan at short notice Detail who would be responsible for monitoring the flood threat and how is this to be done. It is expected that flood warning information would be sourced from the BoM website Regular consultation of the Bureau of Meteorology website for weather forecasts and flood warnings Scheduling of activities on land subject to flooding to avoid high flow periods List of all equipment to be removed from the site A process for removing equipment and materials off site and out of flood risk areas quickly Storing and use of fuels and chemicals away from the flood zone, in bunded areas. Detail staff training requirements and roles and responsibilities for the implementation of the Plan. 	Contractor	Pre-construction & Construction
10	Removal of threatened plants	<ul style="list-style-type: none"> Conduct surveys prior to construction during suitable times for the following threatened flora species: <ul style="list-style-type: none"> Thick-lip Spider Orchid (September – October) Pale Golden Moths (December – January) Surveys will be undertaken in accordance with Guide 1: Preclearing process of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA 2011) and the NSW Guide to 	Roads and Maritime	Pre-construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		Surveying Threatened Plants (OEH 2016).		
11	Removal of threatened plants	<ul style="list-style-type: none"> • If threatened flora species are detected during pre-clearance surveys: <ul style="list-style-type: none"> ○ Ensure the proposal footprint avoids habitat for these species to the greatest extent by either: <ul style="list-style-type: none"> ▪ Redesign of the proposal to avoid habitat ▪ Minimising the proposal footprint in areas of habitat e.g. removing equipment movement buffers. • If the proposal cannot be modified to avoid all impacts to known habitat, then: <ul style="list-style-type: none"> ○ Reassess the potential for a significant impact to the species pursuant to the TSC Act and EPBC Act. If potential significant impacts are identified, then the proposal would be referred to OEH. • If significant impacts are unlikely, develop appropriate mitigation measures in consultation with a suitably qualified orchid specialist. 	Roads and Maritime	Pre-construction
12	Removal of native vegetation	<ul style="list-style-type: none"> • Exclusion zones will be set up at the limit of clearing in accordance with Guide 2: Exclusion zones of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA 2011) • In accordance with QA Specification G40, where works occur within areas of EEC, consider if the limit of clearing can be reduced • Vegetation removal will be undertaken in accordance with Guide 4: Clearing of vegetation and removal of bushrock of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA 2011). 	Roads and Maritime	Pre-construction & construction
13	Removal of hollow-bearing trees: injury to fauna	<ul style="list-style-type: none"> • Removal of hollow-bearing trees must follow the pre-clearing process and staged habitat removal approach described in Guides 1 and 4 of the Roads and Maritime <i>Biodiversity Guidelines</i> (RTA 2011a). Additionally: <ul style="list-style-type: none"> ○ Soft-felling techniques (i.e. use of arborist to manually bring 	Contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		<p>down large limbs and branches etc) should be considered for the very large hollow-bearing trees in the riparian zone (HBT #29), to reduce the potential for injury to resident fauna occupying this tree. However, given its location on a steep bank immediately adjacent to the river, the best construction technique to achieve removal of this tree in a safe manner should take precedence. The final approach to removal of this tree is to be determined on site in consultation between the contractor and on-site ecologist.</p> <ul style="list-style-type: none"> An ecologist or wildlife handler must be present during hollow-bearing tree felling to ensure that any potential impacts on fauna are minimised. See <i>Guides 4 (vegetation clearing) and 9 (fauna handling)</i> of the <i>Roads and Maritime Biodiversity Guidelines (RTA 2011a)</i>. 		
14	Avoid potentially significant impacts to threatened species – Koala	<ul style="list-style-type: none"> Undertake pre-clearance surveys of all areas supporting eucalypts on the morning that the area is to be cleared. If found, an experienced wildlife handler would relocate individuals to nearby habitat outside the works area. 	Contractor	Construction
15	Avoid potentially significant impacts to threatened species – Southern Myotis and Eastern Bentwing-bat	<p>A Bat Management Plan is to be prepared to provide further detail on the management measures to mitigate potential impacts to bats and would include the following:</p> <ul style="list-style-type: none"> Undertake pre-clearance surveys to determine if bats are occupying/roosting beneath the bridge If bats are found to still be occupying the timber bridge, dismantling works should cease until all bats have moved on or have been captured and relocated For removal of the bridge, undertake staged dismantling in a manner that minimizes potential to harm roosting bats. Bats must be relocated by an ecologist or wildlife handler, or treated if injured 	Contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		<ul style="list-style-type: none"> Supplementary bat roosting habitat is to be provided beneath the new bridge, and installed prior to commencing removal of the existing timber bridge. The final design and quantity of the replacement roosting habitat is to be resolved in consultation between the bridge design engineers and a suitably qualified ecologist Removal of the timber bridge must be undertaken outside of the breeding period of the Southern Myotis (e.g. not between the months of October to February), and not during the winter hibernation period (May to August) unless any resident bats can be successfully captured and relocated beforehand. 		
16	Platypus	<ul style="list-style-type: none"> Immediately prior to western bank works, an ecologist would confirm whether any active burrows likely to be used by platypus occur in the works area If present, a specialist platypus ecologist with wildlife handling skills must be engaged to supervise burrow demolition, removing and relocating animals if present. 	Contractor	Construction
17	Impacts to aquatic habitat	<ul style="list-style-type: none"> The works must follow Guide 10: Aquatic habitats and riparian zones in the Roads and Maritime Biodiversity Guidelines (RTA 2011a) and any provisions provided by DPI (Fisheries) <u>All works conform to and are consistent with the REF by NGH Environmental (dated July 2016). In particular all the proposed safeguards and measures to minimise environment impacts detailed in section 6.1.3, 6.2.3 and section 7 of the REF and Appendices must be fully implemented</u> <u>Roads and Maritime would consult with DPI (Fisheries) regarding the design of the stock underpass and the final bridge design.</u> <u>Roads and Maritime would provide written notification to the Minister prior to the carrying out or authorising of any proposed</u> 	Roads and Maritime	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		<p><u>dredging and reclamation works (including temporary working platforms) and consider any matters raised by the Minister within 21 days after giving the notice</u></p> <ul style="list-style-type: none"> • <u>No high risk sediment producing activities (such as pier installation, abutment earthworks or temporary work platform construction) are to be undertaken during the October – December Macquarie Perch spawning period. Some works within 40m of the waterway may be undertaken but would be undertaken with the implementation of rigorous sediment erosion controls and in consultation with DPI (Fisheries)</u> • <u>Copies of the Soil and Water Management Plan (including dewatering procedures), Erosion and Sediment Control Plan (ESCP), Environmental Work Method Statements for works within and adjacent to the waterway, Rehabilitation Plans and pathogen management procedures, for both construction of the new bridge and for decommissioning of the existing bridge, are to be submitted to DPI Fisheries for comment prior to the commencement of works</u> • <u>Best Practice Environmental safeguards (e.g. silt curtains, sediment fences, booms etc.) are to be installed at a minimum, consistent with “Managing Urban Stormwater: Soils and Construction” (4th Edition Landcom, 2004, aka the Blue Book) to ensure that sediment is not mobilised during rainfall events or flood events and that there is no escape of turbid plumes into the adjacent aquatic environment</u> • <u>Material removed from the waterway that is to be temporarily deposited or stockpiled on land is to be located well away from the waterway and to be contained by appropriate sediment control devices as outlined in the Blue Book</u> • <u>Split rock used in reclamation works in or adjacent to the waterway must be clean and free of fines</u> • <u>Spill kits suitable for the containment of fuel and oil spills would be kept on site during construction</u> • <u>DPI Fisheries is to be immediately notified of any fish kills in the</u> 		

No.	Impact	Environmental safeguards	Responsibility	Timing
		<u>vicinity of the works. In such cases, all works other than emergency response procedures are to cease until the issue is rectified and written approval to proceed is provided by DPI Fisheries.</u>		
18	Wildlife mortality: operation	<ul style="list-style-type: none"> • A roadside fence design that allows animals, particularly Koalas, to safely cross the road without becoming trapped in the road corridor must be used • If a fauna friendly fence design is not used, some other form of safe crossing point must be provided as an alternative to facilitate safe fauna movements across the road (such as fauna underpass/culverts or rope ladders over the road). 	Roads and Maritime	Design
19	Unexpected threatened species finds	<ul style="list-style-type: none"> • Prior to works, contractors must be made aware of the unexpected threatened species finds procedure in the Roads and Maritime Biodiversity Guidelines (RTA 2011a), specifically: Stop work protocols. 	Contractor	Construction & post-construction
20	Introduction and spread of noxious weeds	<ul style="list-style-type: none"> • A Weed Management Plan must be developed in accordance with <i>Guide 6 (Weed Management)</i> in the Roads and Maritime <i>Biodiversity Guidelines</i> (RTA 2011a) and Palerang Council control plan for relevant weed species. 	Contractor	Pre-construction & construction
21	Introduction and spread of pathogens and disease	<ul style="list-style-type: none"> • Pathogens will be managed in accordance with Guide 2: Exclusion zones of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA 2011). 	Contractor	Pre-construction & construction
22	Unstable landforms	<ul style="list-style-type: none"> • Undertake stabilization and revegetation in accordance with Guide 3 (Reestablishment of native vegetation) of the Roads and Maritime Biodiversity Guidelines (RTA 2011a) • If planting or sowing are undertaken, locally-occurring native flora species typical of the original habitat types would be used (refer to flora species list in Appendix B for guidance). 	Contractor	Construction & post-construction

No.	Impact	Environmental safeguards	Responsibility	Timing
23	Construction noise impacts	<p>All reasonable and feasible noise minimisation measures must be implemented for works west of Mongarlowe River. These include:</p> <ul style="list-style-type: none"> • Site inductions for employees, contractors and subcontractors • All plant and equipment to be appropriately maintained to ensure optimum running conditions, with periodic monitoring • Simultaneous operation of noisy plant within discernible range of the nearest affected receiver is to be avoided • minimise the use of noise generating activities with impulsive, tonal or low frequency characteristics (such as vibratory rolling, etc) • The offset distance between noisy plant and adjacent sensitive receiver is to be maximised • Noise-emitting plant to be directed away from sensitive receiver. • Plan traffic flow, parking and loading/unloading areas to minimise reversing movements within the site • Non-tonal reversing beepers (or an equivalent mechanism) must be fitted and used on all construction vehicles and mobile plant regularly used on site • Use structures to shield residential receiver from noise. 	Contractor	Construction
24	Construction vibration impacts on closest receiver	<p>When carrying out works west of Mongarlowe River:</p> <ul style="list-style-type: none"> • Use low vibration generating items of plant and equipment where possible eg. smaller vibratory rollers and hydraulic hammers • Minimise consecutive vibration intensive works in the same locality (if applicable). 	Contractor	Construction
25	Traffic impacts	<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)</p>	Contractor	Pre-construction & Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		<p>and QA Specification G10 Control of Traffic (Roads and Maritime, 2008). The TMP will include:</p> <ul style="list-style-type: none"> • Confirmation of haulage routes • Site specific traffic control measures (including signage) to manage and regulate traffic movement • Requirements and methods to consult and inform the local community of impacts on the local road network • A response plan for any construction traffic incident. 		
26	Traffic delays	<ul style="list-style-type: none"> • Consultation must be undertaken with the private resident (Lot 136, DP 755943), residents off Tomboye Road) and Local Land Services (for the TSR) regarding the timing and anticipated traffic impact of the construction program. 	Contractor	Pre-construction
27	Waste management	<ul style="list-style-type: none"> • A Waste Management Plan shall be prepared in accordance with the requirements of QA Specification G36 and will include the following: <ul style="list-style-type: none"> ○ Identify all potential waste streams associated with the works ○ Identify opportunities to minimise the use of resources, and to reuse and recycle materials ○ Outline methods of disposal of waste that cannot be reused or recycled at appropriately licensed facilities. • Waste shall be managed in accordance with the <i>Protection of the Environment Operations Act 1997</i> (POEO Act). 	Contractor	Pre-construction
28	Waste disposal	<ul style="list-style-type: none"> • Cleared vegetation shall not be burnt at the site • Vegetation to be reused onsite for mulch, erosion and sediment erosion control • General waste and recycling receptacles will be provided onsite • Working areas shall be maintained, free of rubbish and cleaned up at the end of each working shift 	Contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		<ul style="list-style-type: none"> Toilets (e.g. portable toilets) will be provided for construction workers Waste would be transported to an appropriate waste disposal facility that is approved to accept the waste, and licenced if required under the POEO Act. 		
29	Aesthetic bridge design	<ul style="list-style-type: none"> Bridge design would be in accordance with the Roads and Maritime <i>Bridge aesthetics guidelines, 2003</i>. 	Roads and Maritime	Pre-construction
30	Visual impacts: construction	<p>Visual amenity impacts must be minimised by:</p> <ul style="list-style-type: none"> Keeping vegetation removal to a minimum (set out in section Error! Reference source not found.) Maintaining the works area in a tidy manner at all times Removing temporary erosion and sediment controls from the site once landforms have been assessed as stable by Roads and Maritime Rehabilitating and progressively stabilising all disturbed areas following the completion of the works. 	Contractor	Pre-construction & Construction
31	Visual impact: post construction	<ul style="list-style-type: none"> Landscaping is to be managed in accordance with Roads and Maritime's Landscape guideline, 2008. 	Contractor	Construction
32	Air pollution	<ul style="list-style-type: none"> An Air Quality Management Plan (AQMP) will be prepared and implemented as part of the CEMP. The AQMP will include, but not be limited to: <ul style="list-style-type: none"> Potential sources of air pollution Air quality management objectives consistent with any relevant published EPA and/or OEH guidelines Mitigation and suppression measures to be implemented methods to manage work during strong winds or other adverse weather conditions A progressive rehabilitation strategy for exposed surfaces. Vegetation or other materials are not to be burnt on site. 	Contractor	Pre-construction

No.	Impact	Environmental safeguards	Responsibility	Timing
33	Impacts to identified Aboriginal Heritage site: CB ISO 4	<ul style="list-style-type: none"> A buffer of at least 5 metres must be established around site CB ISO 4 to avoid inadvertent impacts. The 5m buffer around the site must be clearly delineated on ground (eg. using parawebbing) and declared a 'no-go' zone to be protected from all impacts. 	Roads and Maritime	Pre-construction & Construction
34	Impacts to Unexpected Aboriginal heritage finds	<ul style="list-style-type: none"> The <i>Standard Management Procedure - Unexpected Heritage Items</i> (Roads and Maritime, 2015) will be followed in the event that an unknown or potential Aboriginal object/s, including skeletal remains, is found during construction. This applies where 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 Work will only re-commence once the requirements of that Procedure have been satisfied. 	Contractor	Construction
35	Demolition of Charleyong Bridge	<ul style="list-style-type: none"> NSW Heritage Division (OEH) must be notified not less than 14 days prior to any works commencing to remove Charleyong Bridge. It is a statutory requirement under s.170 that a delisting process be undertaken when demolishing items listed on an s.170 register. Under Clause 14 of the SEPP (Infrastructure), written notice of the intention to carry out the proposed works must be provided to Queanbeyan-Palerang Regional Council, with a copy of the SoHI. An archival recording be prepared for Charleyong Bridge. This would follow the guidelines for Items of Local Heritage Significance as outlined in the NSW Heritage Branch publication <i>How to Prepare Archival Records of Heritage Items</i> Utilise elements from the bridge in a display at the Braidwood museum Reuse of timber and metal elements, where feasible and practicable, on other Roads and Maritime or Council bridges in 	Roads and Maritime	Pre-construction & Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		<p>accordance with Roads and Maritime practice</p> <ul style="list-style-type: none"> Retention of the stone abutments of the bridge to provide clear evidence of its location, following removal of the road deck Prepare a heritage interpretation strategy, in accordance with RMS Heritage Interpretation Guidelines. The Charleyong Bridge is to be included, within the context of the human history of the area and particularly the Nerriga Road / Wool Road route and the Council-owned Allan Truss bridge, Foxlow Bridge. 		
36	Demolition of Charleyong Bridge	<ul style="list-style-type: none"> Demolition of Charleyong Bridge must follow the requirements in the Roads and Maritime practice. All useful intact elements of the bridge must be salvaged and stockpiled for possible future use Retention of the stone abutments of the bridge to provide clear evidence of its location following its removal. 	Contractor	Construction
37	Socio-economic impacts	<ul style="list-style-type: none"> The private land owner's permission would be sought for access to land during the adjustments to private property access Community consultation would be undertaken by Roads and Maritime in accordance with the Roads and Maritime's <i>Community Involvement Practice Notes and Resource Manual</i>. Roads and Maritime would establish appropriate modes of communication for the receipt of complaints from stakeholders on the proposal Complaints received would be recorded and attended to promptly in accordance with the Roads and Maritime's <i>Community Involvement Practice Notes and Resource Manual</i> Roads and Maritime would provide regular updates on the proposal at their website and when appropriate through advertisements in newspapers, variable message signs and letterbox drop-offs. 	Roads and Maritime	Pre-construction & Construction

3.3 Licensing and approvals

Table 3.2: Summary of licensing and approval required

Instrument	Requirement	Timing
<i>Fisheries Management Act 1994 (s199)</i>	Minister for Primary Industries must be notified of any dredging or reclamation works prior to the undertaking of such works.	A minimum of 28 days prior to the commencement of the works.
<i>National Parks and Wildlife Act 1974 (s90)</i>	If the Aboriginal site CB ISO4 cannot be avoided by the proposed works, Roads and Maritime would be required to obtain an AHIP from OEH.	Prior to any impacts to the heritage site.
<i>State Environment Planning Policy (Infrastructure) 2007</i>	<p>Clause 13 of the ISEPP requires that consultation with local council must occur when a development involves excavation that is not minor or inconsequential of the surface of, or a footpath adjacent to, a road for which a council is the roads authority under the <i>Roads Act 1993</i>.</p> <p>Clause 14 of the ISEPP requires that consultation with local council must occur when a development has the potential to impact on a local heritage item when this impact is likely to not be minor or inconsequential to the local heritage item. Charleyong Bridge is considered to be a heritage item of local significance under Schedule 5 of the Palerang Council LEP. Under Clause 14 the public authority undertaking the development must assess the impact on the item, provide the local council with written notice to carry out the development.</p> <p>Impacts and consider any response to the notice received from the council regarding the proposal within 21 days of receiving the notice.</p>	<p>In accordance with ISEPP consultation requirements, the former Palerang Council has been formally notified of the proposed works regarding the demolition of the existing heritage listed timber truss bridge and the impacts to the existing MR92 (letter dated 5 May, 2016).</p> <p>Roads and Maritime must consider any response to the notice received from the council regarding the proposal within 21 days of receiving the notice.</p>

4 References

- Department of Primary Industries (Water) (2016) Epizootic Haematopoietic Necrosis Virus (EHNV)
<http://www.dpi.nsw.gov.au/fishing/pests-diseases/animal-health/wildfish-shellfish/ehnv>
- McMillan Britten and Kell (1998) *Study of the Relative Heritage Significance of all Timber Truss Road Bridges in NSW.*
- NGH Environmental (2016) *Charleyong Bridge Replacement Review of Environmental Factors, Final, July 2016.*
- Roads and Maritime Services (2012) *Timber Truss Bridge Conservation Strategy, Submissions report and revised conservation strategy, August 2012.*



rms.nsw.gov.au



contactus@rms.nsw.gov.au



Customer feedback
Roads and Maritime
Locked Bag 928,
North Sydney NSW 2059