



McKanes Bridge Capacity Upgrade

Submissions Report

Transport for NSW | April 2020

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1 Executive Summary

1.1 The proposal

Transport for NSW (TfNSW) proposes to restore and upgrade the capacity of McKanes Bridge on McKanes Falls Road, South Bowenfels to ensure the bridge can meet the current and future safe operational needs of the road network. The proposed work involves strengthening the existing bridge on the same alignment, to ensure a stronger, safer and more reliable bridge which has a similar appearance to the original bridge.

Key features of the proposal include:

- Restoring McKanes Bridge by retaining the form (the original McDonald truss design and span arrangements) and the fabric (material type) of the existing bridge
- Upgrading critical structural elements of the bridge with, superior and more durable elements.

The upgraded design would include the following:

- Replacing some timber elements with steel
- Replacing some cast or wrought iron elements with steel or modern ductile cast iron
- Strengthening the timber bottom chords of the trusses by adding steel plates
- Replacing the existing timber plank bridge deck with a modern stress-laminated timber (SLT) deck to eliminate gaps
- Replacing the existing timber handrails with a modern steel traffic safety barrier system.

1.2 Display of the Review of Environmental Factors

TfNSW prepared a Review of Environmental Factors (REF) for the McKanes Bridge Capacity Upgrade. The REF was publicly displayed between Wednesday 30 October 2019 and Monday 25 November 2019 at Lithgow City Council and Hampton Halfway Hotel Motel. The REF was also published on the RMS/TfNSW project website and made available for download.

In addition, three drop-in sessions at Lithgow Plaza and Old Hartley School Hall were carried out during the public display period to give the community a chance to learn more about the project, ask questions and 'have their say'.

1.3 Summary of issues and responses

Public display of the REF and the supporting consultation resulted in a total of 36 submissions, of which 35 were from the general community and one was from the Central Acclimatisation Society Incorporate (CAS).

Of these submissions, one was in support of the proposal, and 23 objected to the proposal. The remaining 12 submissions offered no position on whether they supported or objected to the proposal.

The main issues and responses to those issues are summarised below.

1.3.1 Bridge design

A number of submissions commented on the proposed design:

- Issue: Clarification was sought on any changes to the existing 15T load limit on McKanes Falls Road and concern that McKanes Falls Road is not suitable for large trucks.

Response: McKanes Falls Road is a Local Road under the authority of Lithgow City Council. Lithgow City Council has assessed McKanes Falls Road and its suitability for heavy vehicles and has advised that access to McKanes Falls Road will be restricted for General Access vehicles with lengths over 12.5 metres. Lithgow City Council will accept access applications for larger vehicles where the origin and destination is McKanes Falls Road.

- Issue: Why does the bridge rehabilitation design cater for a 42.5T vehicle?

Response: Due to the longer serviceable life of bridge assets compared to road assets, and the costs associated with early intervention for maintenance, TfNSW ensures that all new bridge rehabilitation designs need to cater as a minimum, where possible, for General Access vehicles. The proposal would ensure no further weight restrictions are placed on the bridge due to further deterioration and would help to avoid disruption to businesses and travel time for general commuters. This proposal would also ensure that the bridge would no longer constrain the movement of livestock or agricultural goods for local properties along McKanes Falls Road, subject to Council approval of access applications.

- Issue: Request to build a new two lane bridge alongside the existing bridge and retain/repair the existing bridge for pedestrian and cyclist use only, or build a new two lane bridge in place of the existing bridge.

Response: McKanes Bridge is required to be conserved under the Timber Truss Bridge Conservation Strategy and is listed on the NSW State Heritage Register (SHR) which means it is legally protected under the NSW Heritage Act 1977. Therefore, it is a requirement that any work to the bridge requires approval from the Heritage Council of NSW. Both of these alternative options did not retain the existing heritage value of the bridge, did not meet the Timber Truss Bridge Conservation Strategy and as such would not be approved by the Heritage Council of NSW.

1.3.2 Road safety

A number of submissions commented on road safety of McKanes Falls Road and the surrounding road network:

- Issue: Request to upgrade McKanes Falls Road, particularly at the bridge approaches and intersections.

Response: McKanes Falls Road is a Local Road under the authority of Lithgow City Council. The scope of this proposal is to restore and upgrade the existing McKanes Bridge. TfNSW has consulted with Lithgow Police and reviewed the crash history in proximity to the bridge and the intersections with Jenolan Caves Road and the Great Western Highway from 1996. Crash Data shows minimal crashes during this period, although recognises that the above data does not address the concern of near misses. Therefore, the performance of the bridge and the McKanes Falls

Road intersections would be further investigated and safety modifications, including vegetation clearing, would be undertaken as required.

- Issue: Request to upgrade the surrounding road network including the proposed detour.

Response: The detour proposed during construction is via Jenolan Caves Road and the Great Western Highway which are both State Roads. These roads are frequently inspected and maintained to ensure they provide an acceptable level of service for users.

1.3.3 Detour and emergency access

A number of submissions commented on the detour duration and provision for emergency access during the detour operation:

- Issue: Request for a temporary crossing across the river during construction due to concern regarding the impacts of the detour on frequent users of McKanes Bridge.

Response: The option of a temporary crossing was considered in the constructability phase of the project, however was deemed not to be the preferred option. This option would result in frequent and lengthy delays to road users due to frequent lifting of materials overhead. The topography of the area and the location of the bridge within the Greater Sydney Drinking Water Catchment would result in acquisition of properties so that substantial earthworks for temporary bridge approaches could be undertaken. TfNSW understands that the detour would cause varying travel times for road users based on starting location and destination. It is understood that the detour would be longer for residents along McKanes Falls Road; however the detour travel time of 5 minutes was calculated based upon the travel patterns of the majority of McKanes Falls Road users, which is 'through-traffic'. All affected stakeholders, including emergency services, residents and businesses would be consulted and notified in advance about the detour, allowing them to plan trips with the increased travel times. The length of the construction period would seek to be reduced where possible to reduce the overall timeframe that the detour is in place. The proposal would ensure that McKanes Bridge would be able to meet the current and future safe operational needs of the road network. Although the proposal would have some negative impacts during the construction phase, the upgrades would result in long term benefits for road users.

- Issue: Concern regarding accessibility during emergencies, particularly bushfires

Response: Both the NSW Police Force (Lithgow and Bathurst) and State Emergency Services (SES) were consulted during the preparation of the REF. No objections were received from the NSW Police Force or SES to the proposal. As an action from the submissions received, TfNSW conducted further consultation with the emergency services including the NSW Police Force (Lithgow Station), SES, Rural Fire Service, Fire and Rescue NSW and NSW Health on the proposal, particularly the detour and the impact on emergency planning, with no objections received to the proposal.

The project would be required to develop an Emergency Management Plan which would include a Bushfire Management and Evacuation Plan and a Flood Management Plan. These plans would be prepared in collaboration with emergency services to ensure the most efficient response and accessibility to incidents along McKanes Falls Road for emergency vehicles during construction while the detour is in place. To ensure adequate bushfire evacuation of McKanes Falls Road residents

during the detour operation, any fires reaching a Watch and Act alert level along McKanes Falls Road would result in the project team demobilising from the bridge, clearing the bridge deck and opening the bridge to emergency services and residents for emergency evacuation purposes only.

1.3.4 Heritage

A number of submissions commented on the potential heritage loss as a result of the proposal:

- Issue: Concern that repairing the bridge (increasing load capacity, strengthening and replacing particular bridge members and replacing the traffic barriers) would result in loss of the heritage value of the bridge

Response: McKanes Bridge is a State heritage item listed on the NSW State Heritage Register. A Statement of Heritage Impact (SoHI) was prepared to be submitted with the Section 60 application as required under the Heritage Act. The SoHI concluded that the proposal would not result in a significant reduction of the heritage significance of McKanes Bridge, and as such the proposal was approved under Section 57 and Section 60 of the Heritage Act. Extensive consultation occurred with the Heritage Division, Department of Premier and Cabinet, and the proposal was been approved taking into consideration all heritage aspects.

1.4 Changes to the proposal

No changes are proposed that would require the preparation of a preferred infrastructure report. No revisions have been made to the assessment or environmental management measures as described in the REF.

1.5 Next steps

All feedback received during the public display period, including opposition to the proposal, was assessed during the submissions process. This feedback was assessed against the outcomes of earlier community engagement carried out for the proposal, as well as technical studies. This information and analysis was considered during the finalisation of the Submissions Report and determination of the REF. The REF for the McKanes Bridge Capacity Upgrade has now been determined.

The determination of the REF is the confirmation that the proposal meets all environmental requirements. The determination allows TfNSW to progress into the construction planning for the McKanes Bridge Capacity Upgrade proposal.

Transport for NSW will continue to consult with the community and stakeholders before and during the construction phase. Construction site works are expected to start in the second quarter of 2020. The detour would commence from mid to late 2020.

2 Introduction and background

2.1 Strategic Need for the Proposal

Of the 407 timber truss bridges originally constructed in New South Wales, only 48 remain. A Timber Truss Bridge Conservation Strategy was developed in 2012, to ensure conservation of these heritage structures. This Strategy identified 26 bridges to be conserved, of which included McKanes Bridge.

McKanes Bridge is the oldest of the of four remaining McDonald truss bridges, and the only two span McDonald truss remaining in operation which led to it being regarded as having Stage Heritage Significance.

The Strategy and list of bridges was again reviewed in 2019, with McKanes Bridge remaining on the conservation list.

As the bridge is listed as having State Heritage Significance, it is a requirement that any works to the bridge be undertaken in a manner which maintains its heritage significance, which is measured by formal approval under the Heritage Act 1977.

The McKanes Bridge has been identified to be in poor structural condition, with deteriorating timber elements which has led to reduced operation at a substandard load capacity. Substantial maintenance is required to ensure the bridge can meet the current and future safe operational needs of the road network.

TfNSW investigated multiple options to upgrade McKanes Bridge. The preferred design option was chosen as it met the heritage requirements and was approved by the Heritage Division, Department of Premier and Cabinet (formally the Office of Environment and Heritage), while best meeting all other objectives.

2.2 The proposal

TfNSW proposes to restore and upgrade the capacity of McKanes Bridge on McKanes Falls Road, South Bowenfels. The proposed work involves strengthening the existing bridge on the same alignment, to ensure a stronger, safer and more reliable bridge in a way which maintains the bridge's state heritage value. The location of the proposal is shown in

Figure 1 below. An overview of the proposal is shown in Figure 2 below. The temporary vehicle detour route planned to be implemented during the construction phase is shown in Figure 3.

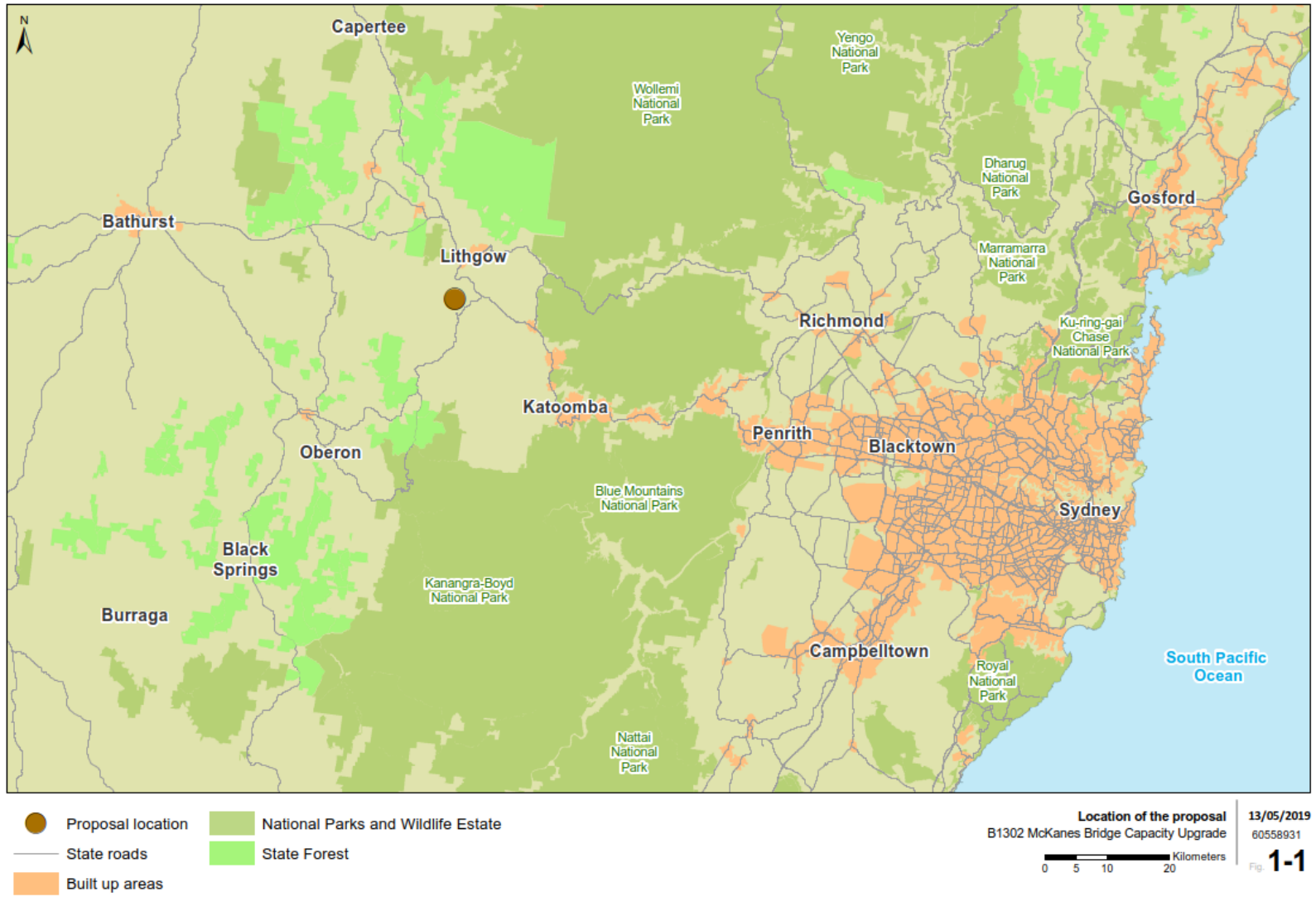


Figure 1 Location of the proposal

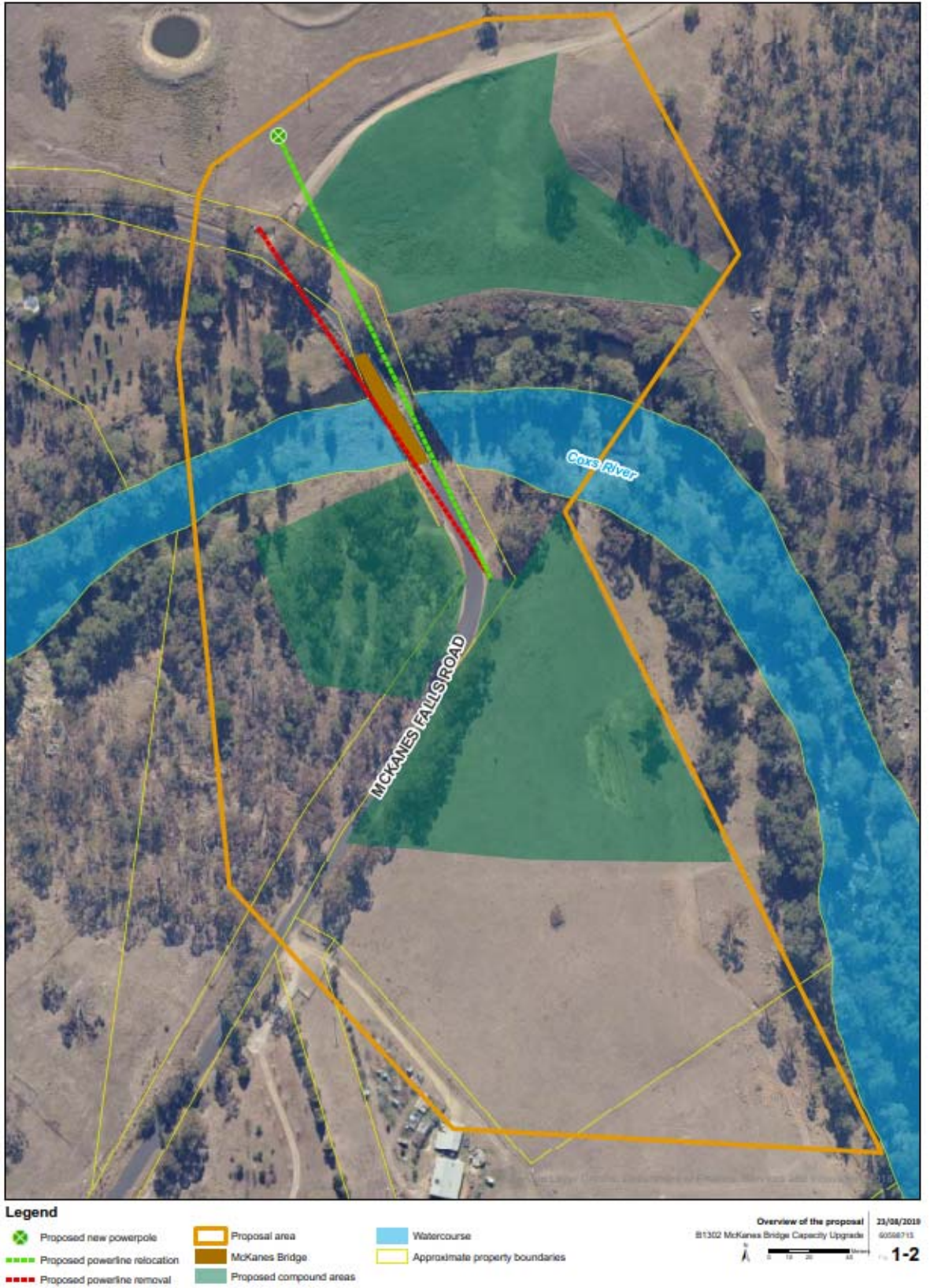


Figure 2 Overview of the proposal

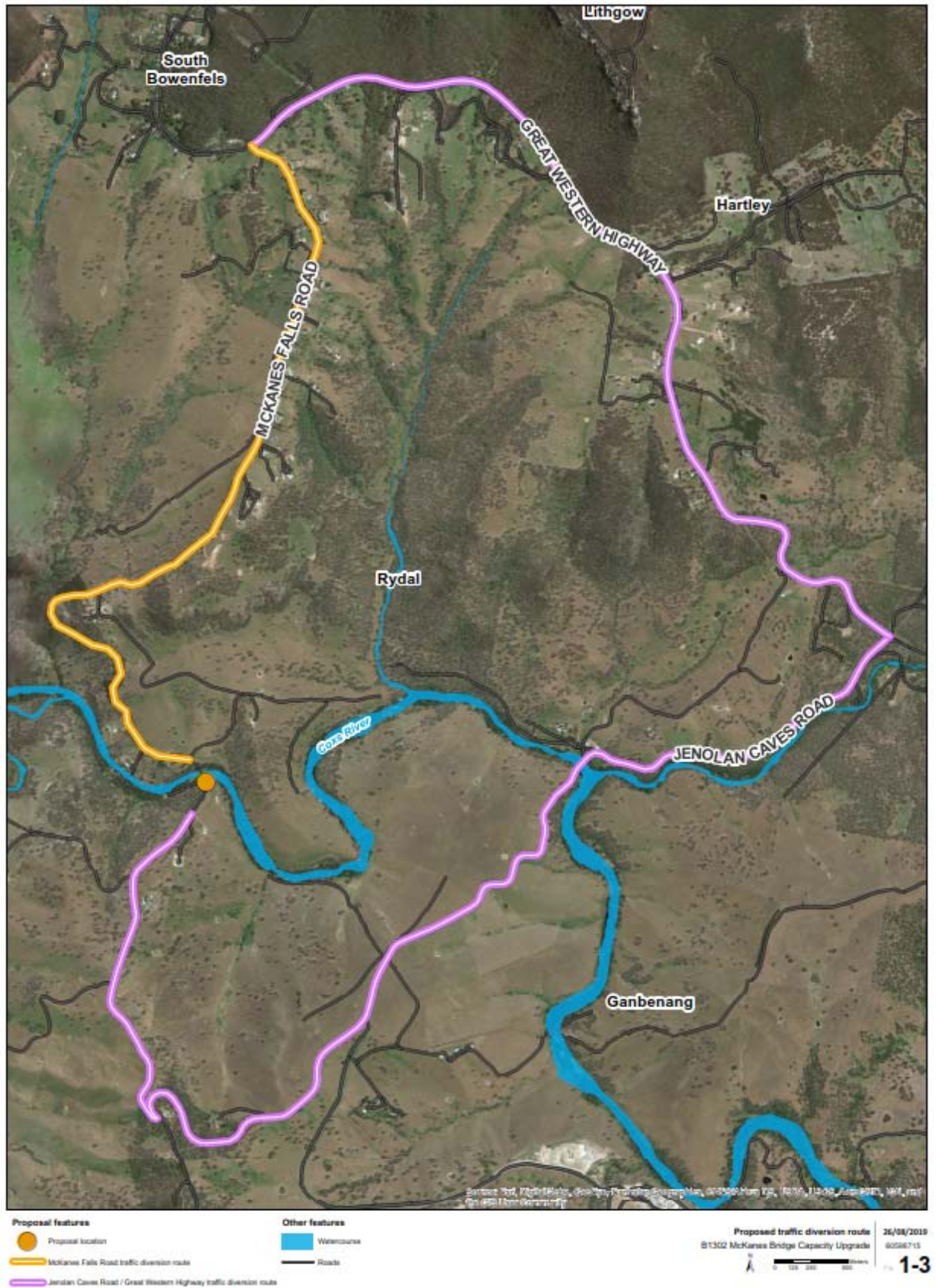


Figure 3 Proposed traffic diversion route

2.3 Purpose of the report

This submissions report relates to the REF prepared for the McKanes Bridge Capacity 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 TfNSW. This submissions report summarises the issues raised and provides responses to each issue (Chapter 3).

No changes are proposed that would require the preparation of a preferred infrastructure report. No revisions have been made to the assessment or environmental management measures as described in the REF.

2.4 Consultation Activities

When determining the list of bridges to be conserved as part of the Timber Bridge Conservation Strategy, numerous consultation activities were undertaken from early 2010 through to the end of 2012. In summary the following stakeholders were consulted;

- 367 local historical societies in NSW
- local councils where bridges were located
- individuals who have made representations in relation to this issue in the past
- National Trust of Australia (NSW) and Engineering Heritage Australia

The Review of Environmental Factors report for the Timber Bridge Conservation Strategy project was publically displayed, and a submissions report was provided which can be found on the RMS/TfNSW environment website online.

The following consultation activities on the McKanes Bridge Upgrade project were conducted:

- Consultation with the Office of Environment and Heritage between 2015 and 2019
- Presentation to Lithgow City Council in January 2019 to consult on the details of the proposal
- Consultation letters outlining the proposal were sent to the Department of Primary Industries, Lithgow City Council, NSW Police Force (Lithgow Police Station), NSW SES and Water NSW in May 2019 prior to the REF being published as part of ISEPP
- Consultation with the Jenolan Caves Steering Committee and Lithgow Bus Lines
- Door knocking was carried out along McKanes Falls Road on 27 September 2019 and 2 October 2019 to start consultation with residents impacted by the detour as well as notify of the REF display period. Sorry we missed you cards were left if property owners were not home
- A postcard advertising the drop in sessions and the REF display period was delivered by Australia Post unaddressed mail to all addresses in Lithgow and Oberon with a total of 3,327 postcards delivered before the drop in sessions
- Advertisements were published in the Lithgow Mercury, Oberon Review and Blue Mountains Gazette newspapers
- Two Facebook events were also created on the NSW Roads page to advertise the drop in sessions at Lithgow and Hartley

- NSW Police (Lithgow), NSW SES, NSW Health, RFS and Fire and Rescue local representatives were invited to meet with the project team to discuss the project in January 2020

The Review of Environmental Factors (REF) was on display for public comment from 30 October 2019 to 25 November 2019. Hard copies of the REF were also on display at Lithgow City Council and Hampton Halfway Hotel Motel. At these locations, community updates and frequently asked question documents were also available.

As part of the REF being on display, three drop in sessions were held:– two at Lithgow Plaza on 7 November and one at Old Hartley School Hall on 20 November.

Table 1 Display locations

Location	Address
Lithgow City Council	180 Mort Street, Lithgow
Hampton Halfway Hotel Motel	1856 Jenolan Caves Road, Hampton

3 Response to issues

TfNSW received 36 submissions, accepted up until the 25 November 2019. Table 2 lists the respondents and each respondent's allocated submission number. The table also indicates where the issues from each submission have been addressed throughout this chapter.

Table 2 Respondents

Respondent	Submission No.	Section number where issues are addressed
Individual	01	Section 3.4
Individual	02	Section 3.10
Individual	03	Section 3.5
Individual	04	Section 3.6
Individual	05	Section 3.2 and 3.8
Individual	06	Section 3.2, 3.4 and 3.8
Individual	07	Section 3.2 and 3.5
Individual	08	Section 3.2, 3.3, 3.4, 3.5, 3.6 and 3.7
Individual	09	Section 3.2
Individual	10	Section 3.2, 3.3 and 3.5
Individual	11	Section 3.2, 3.3, 3.4, 3.5 and 3.6
Individual	12	Section 3.2, 3.3, 3.4, 3.5 and 3.6
Individual	13	Section 3.2 and 3.5
Individual	14	Section 3.2
Individual	15	Section 3.2, 3.4 and 3.5
Individual	16	Section 3.2, 3.4, 3.5 and 3.6
Individual	17	Section 3.2, 3.4, 3.5 and 3.6
Individual	18	Section 3.2, 3.4, 3.5 and 3.6
Individual	19	Section 3.2, 3.5 and 3.6
Individual	20	Section 3.2, 3.5 and 3.6
Individual	21	Section 3.5
Individual	22	Section 3.2
Individual	23	Section 3.2, 3.4, 3.5, 3.6 and 3.7
Individual	24	Section 3.2, 3.5, 3.6 and 3.7
Individual	25	Section 3.2, 3.4, 3.5 and 3.6

Respondent	Submission No.	Section number where issues are addressed
Individual	26	Section 3.2, 3.5 and 3.6
Individual	27	Section 3.5
Individual	28	Section 3.8 and 3.9
Individual	29	Section 3.2
CAS	30	Section 3.7 and 3.9
Individual	31	Section 3.8
Individual	32	Section 3.4
Individual	33	Section 3.4
Individual	34	Section 3.5
Individual	35	Section 3.2
Individual	36	Section 3.10

3.1 Overview of issues raised

A total of 36 submissions were received in response to the display of the REF. This included one submission from the Central Acclimatisation Society Incorporate (CAS) and 35 from the community.

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 TfNSW's response to these issues forms the basis of this chapter.

Twenty three submitters objected to the proposal, one supported the proposal, and twelve offered no position on whether they supported or objected to the proposal.

The main issues raised in the submissions related to:

- The proposed design of the upgraded bridge
- Road safety near the existing bridge
- The proposed detour during construction of the proposal
- The response of emergency services during the proposed road closure
- Potential loss of heritage as a result of the proposal

3.2 Bridge design

Sub Issue– Clarification on load limit of McKanes Falls Road as a result of the bridge capacity increase to 42.5T

Submission number(s)

05, 07, 09, 11, 13, 20, 22, 23, 26

Issue description

- Clarification sought if the current 15T load limit on McKanes Falls Road would be removed
- Clarification sought regarding why the bridge rehabilitation design catered for a 42.5T vehicle
- Concern that McKanes Falls Road is not suitable for large trucks and request that large trucks be prohibited from McKanes Falls Road
- Concern that the increase in capacity of the bridge to 42.5T would result in more trucks using McKanes Falls Road
- Clarification if conditional permits would be provided to McKanes Falls Road property owners for transport of livestock

Response

One of the objectives of the upgrade design of McKanes Bridge was to increase the structural capacity to General Access - General Mass Limits (GML) vehicles, which include rigid trucks, rigid truck and trailer combinations, and common Semi-trailers, up to 42.5 tonnes.

Under the national mass and loading arrangements, General Access vehicles to General Mass Limits have unrestricted access to the road system, except where a road or bridge is sign posted otherwise. Due to the longer serviceable life of bridge assets compared to road assets, and the costs associated with early intervention for maintenance, TfNSW ensures that all new bridge rehabilitation designs need to cater as a minimum, where possible, to General Access Vehicles. The proposal would ensure no further weight restrictions are placed on the bridge due to further deterioration and would help to avoid disruption to businesses and travel time for general commuters. This proposal would also ensure that the bridge would no longer constrain the movement of livestock or agricultural goods for residents along McKanes Falls Road, subject to Council approval of access applications.

When determining vehicle access to the road system, both the bridge and road component of the route is assessed.

McKanes Falls Road is a Local Road under the authority of Lithgow City Council. Lithgow City Council has assessed McKanes Falls Road and its suitability for heavy vehicles and has advised that access to McKanes Falls Road will be restricted for General Access vehicles with lengths over 12.5 metres. Lithgow City Council will accept access applications for larger vehicles where the origin and destination is McKanes Falls Road.

The proposal would enable ongoing safe service levels of McKanes Bridge as part of the road network. Consultation between TfNSW and Lithgow City Council in regard to the safety of the surrounding local roads is ongoing, in particular McKanes Falls Road which services McKanes Bridge. The proposal is not expected to change the volume or type of vehicles using McKanes Falls Road but would ensure the safe and continued use of the bridge by all vehicles.

Sub Issue– Request to review the preferred design option; and provide a new bridge alongside/in place of the existing bridge

Submission number(s)

06, 07, 08, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 23, 24, 25, 26, 29, 35

Issue description

- Request to build a new bridge alongside the existing bridge and retain/repair the existing bridge for pedestrian and cyclist use only
- Request to build a new bridge in place of the existing bridge, and retain the existing McKanes Bridge for display purposes only
- Request to increase the bridge to two-lane operation
- Request to replace the bridge with a concrete bridge
- Request to consider engineered timber elements instead of steel elements
- Concerns that the upgrade would have less than 1 in 100 year flood capacity

Response

McKanes Bridge is listed on the NSW State Heritage Register (SHR) which means it is legally protected under the NSW Heritage Act 1977 (Heritage Act). Therefore, any work to the bridge requires formal approval from the Heritage Council of NSW.

TfNSW investigated six options to upgrade McKanes Bridge. For the option to be approved by the Heritage Council of NSW, it needed to maintain the heritage value of the bridge; specifically the form and dimensions of the trusses, and the requirement that the substructure was to remain as close to possible as the original design, with deteriorated fabrics restored to their original condition. The option needed to ensure that it remained in operation as a road bridge, whilst maintaining its aesthetic and technical significance. The preferred design option (refer Option 4 in Section 2.4.2 of the Review of Environmental Factors (REF) report) was chosen as it met the heritage requirements and was approved by the Heritage Council of NSW, whilst best meeting all other objectives.

The option of converting the existing bridge to a pedestrian bridge and constructing a new two-lane modern (i.e. concrete or steel) bridge adjacent to the existing was Option 6 (refer to Section 2.4.2 in the REF). The option of demolishing the existing bridge and rebuilding with a new two-lane modern (i.e. concrete or steel) bridge was Option 5. These options did not retain the existing heritage value of the bridge, did not meet the Timber Truss Bridge Conservation Strategy and as such would not be approved by the Heritage Council of NSW.

The deteriorated components of the bridge are being replaced with the same type of materials used to build the bridge in 1893. These materials are required to meet TfNSW specification requirements and provide the required durability for the bridge. For the timber components, NSW hardwood durability class 1 would be used. durability class 1 is the highest durability class available and aligns with the timber used in the original structure built in 1893. The new timber is expected to last more than 50 years in this particular application. Engineered woods do not have the same durability level as NSW hardwoods durability class 1 and would require earlier maintenance and replacement. Steel is being used to strengthen the structure whilst maintaining the heritage aspects of the bridge. The original fatigued cast iron components are also being replaced.

There are no changes to the current flood immunity of the bridge, with the current flood immunity level being retained.

3.3 Cost of the Project and Construction Duration

Submission number(s)

8, 10, 11, 12

Issue description

- View that the cost of \$10m and the construction duration is excessive
- Request for full itemised costing and construction program of the proposed work and materials
- Request to use local workforce and materials for the construction of the proposal

Response

The timing and cost of the proposal is a result of the delicate nature of the work being conducted on a heritage bridge. McDonald Timber Trusses are unique in their design and construction, which requires the individual truss elements to be constructed in-situ in a specified sequencing. This means that prefabrication of the timber truss and components off site, transporting to site and lifting in large sections is not possible. Each piece of timber needs to be hand shaped to fit into its designated location. Small cranes would be needed to lift each member in place from the deck of the bridge, where they would then be secured by local bridge carpenters to form the structure. Similarly the existing trusses would need to be dismantled piece-by-piece in a specified sequence.

The proposal is also considered high-risk construction as it would involve working over a waterway, working at heights and requires frequent crane lifts.

Bridge workers, bridge carpenters and plant operators would be from the local area. Some high risk specialised trades would be sought from other areas, if they were unable to be sourced locally. Similarly, materials would be sourced locally, with only materials unable to be sourced locally being sought elsewhere. All timber and concrete would be sourced from NSW. The majority of fabricated steelwork would also be sourced from NSW fabricators.

All material and services would be sourced in accordance with the NSW Government Procurement Guidelines. All contracts with a value of over \$150,000 would be fully disclosed publicly and published on NSW eTendering. Itemised costings of contract rates are unable to be provided publically as this is commercially sensitive information, and may impact those businesses.

3.4 Road safety

Submission number(s)

01, 06, 08, 11, 12, 15, 16, 17, 18, 23, 32, 33

Issue description

- Request to upgrade McKanes Falls Road
- Request to upgrade the surrounding road network including:
 - Hampton Road
 - Jenolan Caves Road
 - Great Western Highway
 - Magpie Hollow Road
- Request to place a 40 km/hr speed restriction on Jenolan Caves Road
- Concern regarding poor vision at the McKanes Falls Road and Jenolan Caves Road intersection
- Concern regarding accidents occurring as a result of the existing single lane bridge
- Concern regarding sight distance at bridge approaches
- Concern regarding cyclist hazards of the existing bridge and suggestion to improve the existing deck

Response

The scope of this proposal is to restore and upgrade the existing McKanes Bridge.

McKanes Bridge is located on a local road however is classified as a State asset due to its heritage significance and the complexity required to maintain the bridge. Lithgow City Council is responsible for operating and maintaining McKanes Falls Road. All submissions relating to McKanes Falls Road have been passed onto Lithgow City Council and consultation continues with regard to the safety of the McKanes Falls Road, and other Local Roads.

The detour proposed during construction is via Jenolan Caves Road and the Great Western Highway which are both State Roads. These roads are frequently inspected and maintained to ensure they provide an acceptable level of service for users.

TfNSW has consulted with Lithgow Police and reviewed the crash history along McKanes Falls Road, including the intersections with Jenolan Caves Road and the Great Western Highway from 1996. Crash Data shows minimal crashes during this period, although recognises that the above data does not address the concern of near misses near the bridge. Therefore, the performance of the bridge and the McKanes Falls Road intersections would be further investigated and safety modifications, including vegetation clearing, would be undertaken as required.

A speed zone review has been conducted along the entire length of Jenolan Caves Road. Due to this review, reducing the speed limit of Jenolan Caves Road at Glenroy Bridge is not considered to be warranted.

The proposal would have a long-term, positive effect for the local community through the provision of overall safety benefits for all road users, including cyclist safety. The upgraded design would include replacing the existing timber plank bridge deck with a modern SLT deck to eliminate gaps. This proposed new SLT deck sheeting would eliminate the risk of bicycle wheels becoming stuck between gaps in the current timber plank type deck sheeting. A separate pedestrian/cycleway is not considered justified given the proposal is not in a high pedestrian or cyclist area.

3.5 Detour and emergency access

Submission number(s)

03, 07, 08, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, 26, 27, 34

Issue description

- Request to provide access across the river (e.g. a causeway)
- Concern regarding detour length and duration and the impacts for frequent users of McKanes Bridge
- Concern regarding impacts to residents, local businesses, local school bus and emergency services
- Concern regarding accessibility during emergencies, particularly bushfires
- Concern regarding increasing traffic along other local roads despite the official detour.

Response

The option of a temporary crossing was considered in constructability, however was deemed not to be the preferred option. This option would result in delays to road users due to frequent lifting of materials overhead. The topography of the area and the location of the bridge within the Greater Sydney Drinking Water Catchment would result in acquisition of properties so that substantial earthworks for temporary bridge approaches could be undertaken.

The option of keeping the bridge open, with traffic control operations, was also considered however was deemed not to be the preferred option. Due to the design and required complex construction sequencing of McDonald trusses, numerous crane lifts from the bridge deck are required. As the bridge is one lane, these lifts would require frequent stoppages of traffic for extended lengths of time. This option was considered to cause more disruption to vehicles using McKanes Falls Road than the detour.

TfNSW understands that the detour would cause varying travel times for road users based on starting location and destination. It is understood that the detour would be longer for residents along McKanes Falls Road, however the detour travel time was calculated based upon the analysis of existing travel patterns of McKanes Falls Road, which showed the majority of traffic as 'through-traffic'.

All affected stakeholders, including emergency services, residents and businesses would be consulted and notified in advance about the detour, allowing them to plan trips with the increased travel times. The length of the detour duration would seek to be reduced where possible to reduce the overall timeframe that the detour is in place.

The proposal would ensure that McKanes Bridge would be able to meet the current and future safe operational needs of the road network. Although the proposal would have some negative impacts during the construction phase, the upgrades would result in long term benefits for road users.

Both the NSW Police Force (Lithgow and Bathurst) and State Emergency Services (SES) were consulted during the preparation of the REF. As detailed in Section 5.4 of the REF, a verbal response was received from the Chief Inspector at Lithgow Police Station with no objections to the proposal. SES did not provide a response to the consultation letter. As an action from the submissions, TfNSW has conducted further consultation with the emergency services including the NSW Police Force (Lithgow Station), State Emergency Services, Rural Fire Service, Fire and Rescue NSW and NSW Health on the proposal, particularly the detour and the impact on emergency planning, with no objections received to the proposal.

The project is required to develop an Emergency Response Plan which would include a Bushfire Management and Evacuation Plan and a Flood Management Plan; these plans would be prepared in collaboration with emergency services to ensure the most efficient response and accessibility for emergency vehicles during construction while the detour is in place.

To ensure adequate bushfire evacuation of McKanes Falls Road residents during the detour operation, any fires reaching a Watch and Act alert level along McKanes Falls Road, would result in the project team demobilising from the bridge, clearing the bridge deck and opening the bridge to emergency services and residents for emergency evacuation only.

Both the school bus service and garbage service on McKanes Falls Road would continue during construction, with minimal impact to residents. TfNSW is working closely with Lithgow Bus Lines to provide an additional school bus route service. Consultation would continue with the residents of McKanes Falls Road as the project progresses.

3.6 Heritage

Submissions number(s)

04, 08, 11, 12, 16, 17, 18, 19, 20, 23, 24, 25, 26

Issue description

- Support for limited upgrade to retain heritage appeal of McKanes Bridge
- Concern regarding the loss of heritage value from the bridge, that hasn't already been lost
- Suggestion to retain the bridge as it would continue to cater for vehicle traffic
- Suggestion to use stronger timber elements for the bridge safety railing
- Suggestion to retain the bridge for pedestrians and cyclists or as a heritage monument
- Concern that repairing the bridge (increasing load capacity, changing traffic barriers) would lose its heritage value

Response

The preferred upgrade option would retain the essential heritage-significant form and fabric of the bridge whilst generally upgrading critical bridge elements with structurally superior and more durable elements (refer to Section 2.5 of the REF). TfNSW acknowledges that the original fabric of the bridge has deteriorated over the years, with the original timber members of the bridge being previously replaced or repaired, however the design of the McDonald truss bridge in the exact location it was originally built, and the use of the bridge by traffic are considered to be the most important elements in maintaining the heritage significance of the bridge.

As discussed in Section 2.1, McKanes Bridge is a State heritage item listed on the NSW State Heritage Register. Therefore, an approval to conduct the works was required in accordance with Section 57 of the Heritage Act. An application under Section 60 of the Heritage Act was also required in order to undertake the works. A Statement of Heritage Impact (SoHI) was prepared to be submitted with the Section 60 application. The SoHI concluded that the proposal would not result in a significant reduction of the heritage significance of McKanes Bridge, and as such the proposal was approved under Section 57 and Section 60. Recommendations were made in the SoHI for the proposal as described in Section 6.6.3 of the REF.

Extensive consultation occurred with the Heritage Division, Department of Premier and Cabinet, as discussed in Section 5.4 of the REF (formerly Office of Environment and Heritage), and the current proposal has been approved taking into consideration all heritage aspects.

McKanes Bridge has been identified to be in poor structural condition. The timber elements of the bridge are deteriorating, with some features being substandard, such as the timber side rails which do not meet TfNSW safety criteria to be considered traffic barriers. McKanes Bridge currently has a 15 tonne load limit which was placed on the bridge in 2017. This highlights that the condition of the bridge is deteriorating and if upgrades do not occur, the bridge would steadily deteriorate and be deemed unsafe, leading to its closure. The upgrades are required to ensure the bridge can continue to withstand traffic into the future. Steel is being used to provide the structural integrity required whilst maintaining the heritage aspects of the bridge.

Timber bridges deteriorate very rapidly when they are no longer in use as they need to continue to carry vehicle traffic. Therefore, leaving the bridge for cyclists and pedestrians would still require ongoing maintenance to ensure the bridge met safety standards, which would result in further ongoing costs. Preserving the bridge for

cyclists and pedestrians would also reduce the heritage value of the bridge as it would no longer be used for its original intended purpose, to carry vehicle traffic.

Examples of original metal components in good condition would be retained for detailed inspection, testing and analysis.

3.7 Consultation

Submission number(s)

08, 23, 24

Issue description

- Concern regarding community consultation during the proposal development
- Concern regarding decisions being made regarding how residents would be impacted
- Concern regarding no consideration for family/friend connections across the bridge

Response

TfNSW conducted community consultation prior and throughout the display of the REF. Consultation was undertaken as detailed in Section 2.4 above.

Consultation activities included:

- Door knocking was carried out along McKanes Falls Road on 27 September and 2 October 2019 to start consultation with residents impacted by the detour as well as notify of the REF display period. Sorry we missed you cards were left if property owners were not home.
- A postcard advertising the drop in sessions and the REF display period was delivered by Australia Post unaddressed mail to all addresses in Lithgow and Oberon with a total of 3,327 postcards delivered before the drop in sessions.
- Advertisements were also published in the Lithgow Mercury, Oberon Review and Blue Mountains Gazette newspapers.
- Two Facebook events were also created on the NSW Roads page to advertise the drop in sessions at Lithgow and Hartley.

The Review of Environmental Factors (REF) was on display for public comment from 30 October 2019 to 25 November 2019. Hard copies of the REF were also on display at Lithgow City Council and Hampton Halfway Hotel Motel. At these locations, community updates and frequently asked question documents were also available.

As part of the REF being on display, three drop in sessions were held, two at Lithgow Plaza on 7 November and one at Old Hartley School Hall on 20 November.

For further details on the consultation that was carried out for this project, a Community Consultation Report has been published and can be downloaded from the TfNSW project website.

While there would be impacts to community connectivity either side of the bridge, these impacts would be temporary. If the proposed upgrades do not occur the bridge would continue to deteriorate which is likely to lead to further disruptions to residents. The proposal would ensure long-term safe access for all residents over the river.

3.8 Weed species

Submission number(s)

05, 06, 28, 31

Issue description

- Remove pest species, such as willows and blackberry bushes
- Concern regarding responsibility to eradicate weeds
- Provide ongoing weed control and grass cutting
- Concern regarding invasive flora taking over given proposal length
- Concern regarding access to Coxs River to remove invasive flora.

Response

As part of the construction environmental management plan (CEMP), Flora and Fauna Management would address Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA Projects (RTA, 2011) and the Central West Regional Weeds Management Plan for noxious weeds. This would include protocols to manage noxious weeds and pathogens that may be impacted or result from the proposal. Vegetation clearing and weed management would be undertaken within the project site. Investigation into vegetation clearing would also be undertaken at the intersections of McKanes Falls Road and Jenolan Cave Road, and McKanes Falls Road and the Great Western Highway.

General removal of weed species and ongoing grass cutting along McKanes Falls Road and other local roads is the responsibility of Council or Local Land Services; therefore TfNSW can refer this concern to Lithgow City Council.

Existing access roads on the Crown Land south of the bridge would remain open to allow access to most parts of the Coxs River during construction. Some areas would require closure to ensure the safety of the community and workers. Any impacts to the access roads would be rehabilitated at the end of construction.

3.9 Fish stocking

Submission number(s)

28, 30

Issue description

- Maintain Cox's River as a dedicated fish stocking site
- Maintain access to Cocks River
- Concern regarding impacts to fish and the water
- Provide silt control for storm water runoff.

Response

TfNSW understands that this site is utilised by CAS volunteers to stock Cocks River with fish provided by NSW Department of Primary Industries – Fisheries (DPI Fisheries). Although access to the river may be altered, the proposal would not impact on volunteers being able to reach the river for stocking purposes.

A consultation letter was sent to NSW DPI Fisheries under the requirements of the State Environmental Planning Policy (Infrastructure) 2007 on the 24 May 2019 with a response received on 5 June 2019. The response to the consultation letter is detailed in Section 5.4 of the REF with a copy of the letter and response attached in Appendix H of the REF. TfNSW would continue to consult with Fisheries throughout the construction phase if required.

Existing access tracks on Crown Land south of the bridge would remain open to allow access to most parts of the Cocks River during construction. Some areas underneath the bridge would require closure to ensure the safety of the community and workers. Any impacts to the access roads would be rehabilitated at the end of construction, returning access back to the existing conditions once construction is complete.

Construction sequencing has been undertaken to ensure that all works are being undertaken outside of the normal flow channel within the waterway. It is therefore considered unlikely that the proposal would result in loss of areas of aquatic habitat, or present barriers to fish movements within the river.

A site-specific erosion and sediment control plan would be implemented as part of the CEMP which would provide management measures to control stormwater runoff and other potential impacts to the waterway and surrounding environment. Erosion and sediment controls would be checked and maintained on a regular basis and would not be removed until work is complete and areas are stabilised.

3.10 Miscellaneous

Submission number(s)

2, 36

Issue description

- Celebrate the bridge opening with a proposed day event
- Comment regarding the support of spending \$10m on an important bridge

Response

An official opening event would be held on completion of the bridge.

4 Environmental management

The REF for the McKanes Bridge Capacity Upgrade identified the framework for environmental management, including safeguards and management measures that would be adopted to avoid or reduce environmental impacts (Section 7.2 of the REF).

Environmental management during construction would 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. These management measures would be incorporated into the detailed design and applied during the construction and operation of the proposal.

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

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

4.2 5.2 Summary of safeguards and management measures

Environmental safeguards outlined in this document would be incorporated into the detailed design phase of the proposal and during construction and operation of the proposal. These safeguards would minimise any potential adverse impacts arising from the proposed work on the surrounding environment. The safeguards and management measures are summarised in Table 3 below.

Table 3: Summary of site specific environmental safeguards

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
GEN1	General - minimise environmental impacts during construction	<p>A CEMP would be prepared and submitted for review and endorsement of the TfNSW Environment Manager prior to commencement of the activity.</p> <p>As a minimum, the CEMP would address the following:</p> <ul style="list-style-type: none"> • any requirements associated with statutory approvals • details of how the project would implement the identified safeguards outlined in the REF • issue-specific environmental management plans • roles and responsibilities • communication requirements • induction and training requirements • procedures for monitoring and evaluating environmental performance, and for corrective action • reporting requirements and record-keeping • procedures for emergency and incident management • procedures for audit and review. <p>The endorsed CEMP would be implemented during the undertaking of the activity.</p>	TfNSW project manager	Pre-construction / detailed design	Core standard safeguard GEN1
GEN2	General - notification	All businesses, residential properties and other key stakeholders (eg local councils) likely to be affected by the activity would be notified at least five days prior to commencement of the activity.	TfNSW project manager	Pre-construction	Core standard safeguard GEN2
GEN3	General – environmental awareness	All personnel working on site would receive training to ensure awareness of environment protection requirements to be implemented during the project. This would include up-front site induction and regular "toolbox" style briefings.	TfNSW project manager	Pre-construction / detailed design	Core standard safeguard GEN3

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		<p>Site-specific training would be provided to personnel engaged in activities or areas of higher risk. These include:</p> <ul style="list-style-type: none"> • The heritage importance of McKanes Bridge • Adjoining residential areas requiring particular noise management measures • Incident management plan and notification requirements • Location of spill kits and use of spill kits • Fire prevention. 			
GEN4	Community consultation	All complaints would be recorded on a complaints register and attended to promptly.	RMS project manager	Construction	Core standard safeguard GEN4
GEN5	General – minimise environmental impacts during construction	<p>Works and ancillary area would be clearly delineated and marked.</p> <p>Parking of vehicles and storage of plant/equipment is to occur on site compounds. Where this is not possible, vehicles and plant/equipment would be kept away from environmentally sensitive areas and outside the dripline of trees.</p>	TfNSW	Construction	Additional safeguard
GEN6	General – fire safety	<p>A Fire Management Plan would be prepared in accordance with the <i>Rural Fires Act 1997</i> and implemented as part of the CEMP. It would be guided by the NSW Rural Fire Service publication ‘Equipment and Machinery Use in Bushfire Prone Areas’, and include, but not limited to:</p> <ul style="list-style-type: none"> • Plans showing evacuation methods and routes • Local fire brigade and other emergency services contacts • Location of appropriate firefighting equipment on site and 	TfNSW	Construction	Section 4.5 of QA G36 <i>Environment Protection</i>

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		<p>in vehicles</p> <ul style="list-style-type: none"> • High fire danger periods and all plant and equipment that require spark arresters • List of activities, including cutting, welding or grinding, that must not be undertaken when a total fire ban is proclaimed 			
F1	Biodiversity	<p>Flora and Fauna Management aspects would be prepared in accordance with TfNSW's <i>Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA Projects</i> (RTA, 2011) and implemented as part of the CEMP. It would include, but not be limited to:</p> <ul style="list-style-type: none"> • plans showing areas to be cleared and areas to be protected, including exclusion zones, protected habitat features and revegetation areas • requirements set out in the <i>Landscape Guideline</i> (RTA, 2008) • pre-clearing survey requirements • procedures for unexpected threatened species finds and fauna handling • procedures addressing relevant matters specified in the <i>Policy and guidelines for fish habitat conservation and management</i> (DPI Fisheries, 2013) • Protocols to manage weeds and pathogens. 	TfNSW	Detailed design / pre-construction	Section 4.8 of QA G36 <i>Environment Protection</i>
F2	Biodiversity	Measures to further avoid and minimise the construction footprint and native vegetation or habitat removal would be investigated during detailed design and implemented where practicable and feasible.	TfNSW	Detailed design / pre-construction	Additional safeguard
F3	Biodiversity	All pruning and trimming of trees is to be in accordance with the <i>Australian Standard 4373-2007 Pruning of amenity trees</i> .	TfNSW	Detailed design / pre-construction	Additional safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		Pruning of mature trees is to be undertaken by a qualified arborist.			
F4	Biodiversity – tree protection	Tree protection fencing would be established around the perimeter of any tree requiring a protection zone. If the protective fencing requires temporary removal, trunk, branch and ground protection must be installed and must comply with <i>AS 4970-2009 - Protection of trees on development sites</i> . Existing fencing and site hoarding may be used as tree protection fencing.	TfNSW	Detailed design / pre-construction	Standard safeguard B11
F5	Biodiversity – Fauna handling	Fauna would be managed in accordance with <i>Guide 9: Fauna handling of the Biodiversity Guidelines: Protecting and managing biodiversity on RMS projects</i> (RTA 2011).	TfNSW	Construction	Additional safeguard
F6	Biodiversity – unexpected finds	If unexpected threatened flora or fauna are discovered, works would stop immediately and the <i>RMS Unexpected Threatened Species Find Procedure</i> in the <i>RMS Biodiversity Guideline 2011</i> implemented.	TfNSW	Construction	Standard safeguard B8
F7	Biodiversity	No unnecessary materials or equipment should be stored in the area adjacent to the northern abutment to maintain ground level access for wombats to the eastern side of the bridge.	TfNSW	Construction	Additional safeguard
F8	Biodiversity	Compensatory planting should be implemented to account for mature trees removed as part of the project.	TfNSW	Post-construction	Additional safeguard
F9	Biodiversity	Night time lighting should be minimised to prevent disruption to microbat flyways and foraging along the river	TfNSW	Construction	Additional safeguard
W1	Surface water	A CEMP would be prepared and implemented. The CEMP would identify all reasonably foreseeable risks relating to soil erosion and water pollution including an incident management	TfNSW	Detailed design / pre-construction	Section 2.1 of <i>QA G38 Soil and Water</i>

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		plan and describe how these risks would be addressed during construction in accordance with <i>Managing Urban Stormwater: Soils and Construction Vol 1 and 2A Installation of services</i> (the Blue Book) (Landcom 2004, DECC and Water NSW 2008).			<i>Management</i>
W2	Surface water	<p>A site-specific Erosion and Sediment Control Plan/s would be prepared by a qualified and experienced Soil Conservationist and implemented as part of the CEMP.</p> <p>The Plan would 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>	TfNSW	Detailed design / Pre-construction	Section 2.2 of <i>QA G38 Soil and Water Management</i>
W3	Surface water	<p>An EWMS would be developed to manage potential spills for all plant and equipment working over the Coxs River, with a capacity to hold more than 20 litres of a single type of fuel, lubricant or hydraulic fluid.</p> <p>An emergency spill kit is to be kept on site at all times and maintained throughout the construction work.</p> <p>The spill kit must be appropriately sized for the volume of substances at the work site.</p> <p>The spill kit must be readily accessible at the work area(s) and in site compounds.</p> <p>All workers would be advised of the locations of spill kits and trained in their use.</p>	TfNSW	Construction	Additional safeguard
W4	Surface water	Water for construction activities would be managed within sustainable limits of the area and catchment. It may be necessary to reduce or limit some construction activities if	TfNSW	Construction	Additional safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		water supply is heavily constrained. The Regional (Program) Environmental Manager would be consulted for direction, if water supply is impacted.			
W5	Surface water	Emergency contacts would be kept in an easily accessible location on vehicles, plant and site office. All workers would be advised of these contact details and procedures.	TfNSW	Construction	Additional safeguard
W6	Flooding	Any changes in bridge design of a structural nature are to be investigated for potential changes to flood characteristics. This includes changes to upstream and downstream water levels, velocities and direction	TfNSW Project Manager	Detailed design	Additional safeguard
E1	Soil	Site-specific Erosion and Sediment Control Plan(s) would be prepared and implemented as part of the CEMP. Erosion and sedimentation controls are to be checked and maintained on a regular basis (including clearing of sediment from behind barriers) and records kept and provided on request.	TfNSW	Construction	Standard safeguard EIA-P05-G01-T02
E2	Soil	Erosion and sediment control measures are not to be removed until the work is complete, and areas are stabilised.	TfNSW	Construction	Standard safeguard EIA-P05-G01-T02
E3	Soil	The maintenance of established stockpile sites is to be in accordance with the TfNSW Services Stockpile Site Management Guideline (EMS-TG-10).	TfNSW	Construction	Standard safeguard EIA-P05-G01-T02
T1	Traffic and transport	A Traffic Management Plan (TMP) would be prepared and implemented as part of the CEMP. The TMP would be prepared in accordance with the TfNSW <i>Traffic Control at</i>	TfNSW	Detailed design / Pre-construction	TCaWS Manual, QA Spec G10

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		<p><i>Work Sites Manual</i> (TfNSW, 2018) and <i>QA Specification G10 Control of Traffic</i> (TfNSW, 2018). The TMP would 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 • 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 • 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. 			
T2	Traffic and transport	A Road Occupancy Licence would be required for all work impacting on traffic flows, including closures, prior to that work commencing.	TfNSW, Lithgow City Council	Preconstruction	Additional safeguard
T3	Traffic and transport	Transport companies, emergency services and any bus companies would be notified of the proposed impact due to partial road closure 14 days prior to works commencing.	TfNSW	Pre/construction	Additional safeguard
N1	Noise and vibration	<p>Noise and Vibration Management would be prepared and implemented as part of the CEMP and generally follow the approach in the <i>Interim Construction Noise Guideline</i> (ICNG) (DECC, 2009) and identify:</p> <ul style="list-style-type: none"> • all potential significant noise and vibration generating activities associated with the activity • feasible and reasonable mitigation measures to be 	TfNSW	Detailed design / pre-construction	Section 4.6 of QA G36 <i>Environment Protection</i>

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		<p>implemented</p> <ul style="list-style-type: none"> • a monitoring program to assess performance against relevant noise and vibration criteria • arrangements for consultation with affected neighbours and sensitive receivers, including notification and complaint handling procedures • contingency measures to be implemented in the event of non-compliance with noise and vibration criteria. 			
N2	Noise and vibration	<p>All sensitive receivers likely to be affected would be notified at least seven days prior to commencement of any works associated with the activity that may have an adverse noise or vibration impact. To ensure consistent communication with affected receivers, it is recommended to notify receivers R1 to R8 (as identified within Error! Reference source not found.) of the proposed work. The notification would provide details of:</p> <ul style="list-style-type: none"> • the project • construction period and construction hours • contact information for project management staff • complaint and incident reporting • how to obtain further information. 	TfNSW	Detailed design / pre-construction	Additional safeguard
N3	Noise and vibration	<p>Works would be carried out during normal work hours (i.e 7am to 6pm Monday to Friday; 7am to 1pm Saturdays). Any work that is performed outside normal work hours or on Sundays or public holidays is to minimise noise impacts.</p>	TfNSW	Construction	Additional safeguard
H1	Non-Aboriginal heritage	<p><i>The Standard Management Procedure - Unexpected Heritage Items</i> (TfNSW, 2015) would be followed in the event that any</p>	TfNSW	Detailed design / pre-construction	Section 4.10 of QA G36

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		<p>unexpected heritage items, archaeological remains or potential relics of Non-Aboriginal origin are encountered.</p> <p>Work would only re-commence once the requirements of that Procedure have been satisfied.</p>			<i>Environment Protection</i>
H2	Non-Aboriginal heritage	<p>An Archival recording would be implemented including 3D mapping (laser scanning) prior to works commencing on the bridge.</p> <p>Examples of metal components in good condition would be retained for detailed inspection, testing and analysis.</p>	TfNSW	Pre-construction	Additional safeguard
B1	Aboriginal heritage	<p><i>The Standard Management Procedure - Unexpected Heritage Items</i> (TfNSW, 2015) would be followed in the event that an unknown or potential Aboriginal object/s, including skeletal remains, is found during construction. This applies where TfNSW 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.</p> <p>Work would only re-commence once the requirements of that Procedure have been satisfied.</p>	TfNSW	Detailed design / pre-construction	Section 4.9 of QA G36 <i>Environment Protection</i>
V1	Landscape character and visual impact	Landscaping is to be managed in accordance with the TfNSW Services <i>Landscape guideline, 2008</i> .	TfNSW	Construction	Additional safeguard
V2	Landscape character and	Works to be carried out in accordance with EIA-N04 <i>Guideline for Landscape Character and visual impact assessment</i> .	TfNSW	Construction	Additional safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
	visual impacts				
S1	Socio-economic	<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, stakeholders, emergency services and businesses including changed traffic and access conditions contact name and number for complaints. <p>The CP would be prepared in accordance with the <i>Community Involvement and Communications Resource Manual</i> (RTA, 2008).</p>	TfNSW	Detailed design / pre-construction	Standard Safeguard
S2	Private Property access	Potentially affected residents would be consulted prior to any short-term obstruction of access. Works would be timed around requirements for access where feasible.	TfNSW	Construction	Additional safeguard
A1	Air quality	<p>Air Quality Management would be prepared and implemented as part of the CEMP. AQM would include, but not be limited to:</p> <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. 	TfNSW	Detailed design / pre-construction	Section 4.4 of QA G36 <i>Environment Protection</i>

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
C1	Contamination and hazardous materials	If contaminated areas are encountered during construction, appropriate control measures would be implemented to manage the immediate risks of contamination. All other works that may impact on the contaminated area would 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 TfNSW Environment Manager and/or EPA.	TfNSW	Detailed design / Pre-construction	Section 4.2 of QA G36 <i>Environment Protection</i>
C2	Contamination and hazardous materials	A site-specific emergency spill plan would be developed and include spill management measures in accordance with the TfNSW <i>Code of Practice for Water Management</i> (RTA, 1999) and relevant EPA guidelines. The plan would address measures to be implemented in the event of a spill, including initial response and containment, notification of emergency services and relevant authorities (including TfNSW and EPA officers).	TfNSW	Detailed design/Pre-construction	
C3	Contamination and hazardous materials	The storage of chemicals and hazardous materials would be conducted in accordance with the relevant Material Safety Data Sheets (MSDS) and in accordance with requirements of the <i>Environmentally Hazardous Chemicals Act 1985</i> .	TfNSW	Construction	
M1	Waste	Waste Management would be prepared and implemented as part of the CEMP. The WMP would include but not be limited to: <ul style="list-style-type: none"> measures to avoid and minimise waste associated with the proposal classification of wastes and management options (re-use, recycle, stockpile, disposal) statutory approvals required for managing both on and off- 	TfNSW	Detailed design / pre-construction	Section 4.2 of QA G36 <i>Environment Protection</i>

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		<p>site waste, or application of any relevant resource recovery exemptions</p> <ul style="list-style-type: none"> • procedures for storage, transport and disposal • monitoring, record keeping and reporting. <p>Waste Management would be prepared taking into account the <i>Environmental Procedure - Management of Wastes on TfNSW Services Land</i> (TfNSW, 2014) and relevant TfNSW Waste Fact Sheets.</p>			
I1	Cumulative impacts	The CEMP would be revised to consider potential cumulative impacts from surrounding development activities as they become known.	Project manager	Construction	Additional safeguard



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