Great Western Highway Upgrade Program – Little Hartley to Lithgow (West Section)

Submissions Report

Transport for NSW | April 2022

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Approval and authorisation

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Signed:	
Dated:	

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Executive summary

The proposal

Transport for NSW (Transport) proposes to upgrade the Great Western Highway between Little Hartley and Lithgow, NSW (the proposal), located immediately to the west of the Blue Mountains within the Lithgow City local government area. The upgrade will reduce congestion, deliver safer, more efficient and reliable journeys for those travelling in, around and through the Blue Mountains, and better connect communities in the Central West.

Key features of the proposal include:

- Upgrade of about 14 kilometres of the Great Western Highway between Little Hartley and Lithgow to a four lane divided highway with two lanes in each direction
- Provision of service roads
- Provision of two rest areas, one eastbound and one westbound
- Provision of five new bridges
- Upgrade of the existing bridge over River Lett.

The proposal has been designed in four sections to allow flexibility in construction staging and delivery and includes:

- Coxs River Road
- Little Hartley to River Lett Hill
- River Lett Hill to Forty Bends
- Forty Bends to Lithgow.

Subject to planning approval, construction of the proposal is planned to commence in 2022 and the current program would take about three years to complete.

Display of the Review of Environmental Factors

Transport for NSW (Transport) prepared a Review of Environmental Factors (REF) for the Great Western Highway Upgrade Program – Little Hartley to Lithgow (West Section). The REF was publicly displayed, and feedback was sought from the community from 23 November 2021 to 16 January 2022.

The REF was published on the Little Hartley to Lithgow project interactive web portal at ***nswroads.work/gwhwestconsult*** and made available for download. Hard copies of the REF were available for viewing at Lithgow City Council Administration Centre and Lithgow Library Learning Centre, through the Hartley District Progress Association, and provided via mail upon request.

The REF and concept design consultation was widely promoted within the Blue Mountains, the Central West and Western Sydney through print and radio advertisements, social media, print and electronic newsletters, and static displays.

Six public consultation sessions were held between 23 November and 11 December 2021. These were a mixture of online and COVIDSafe face-to-face sessions.

Phone consultations were offered for anyone unable to engage either online or in person.

Summary of issues and responses

Public display of the REF and the supporting consultation resulted in receipt of 203 submissions from 181 respondents, including 173 individuals from the community, five community organisations and three government agencies.

Of these submissions, 11 per cent were in support of the proposal, 74 per cent objected to the proposal and 9.5 per cent were neutral to the proposal. The remaining 5.5 per cent submissions offered no position on whether they supported or objected to the proposal.

Needs and options considered

About 65 per cent of submissions received commented on the need and options considered for the proposal, particularly with regard to the following:

- Request that alternative routes be considered for the proposal
- Request that the Benefit Cost Ratio (BCR) and Business Case of the proposal is made publicly available.

As discussed in Section 2.4.1 of the REF, a thorough corridor and route selection process was carried out for the proposal.

Alternate routes identified further to the north of the preferred alignment, investigated in May 2008, conflicted with land owned by the Department of Defence. Routes to the north and south of the Department of Defence land were considered but found not to be viable due to increased road length, steep grades, travel time impacts and connection issues to Jenolan Caves Road. The preferred option corridor was selected as it would avoid potential environmental, social, and topographical constraints. The preferred option route would also pose the least issues from a constructability standpoint and provide the fastest travel times. In 2013, the preferred route was incorporated into the *Lithgow Local Environmental Plan 2014*.

A business case has been prepared for the full Great Western Highway Upgrade Program and is under consideration by government. The East Section and West Section (the proposal) business cases have been accepted by Infrastructure NSW (INSW). Given the level of information within, the business case will maintain its confidentiality to help drive value-creating competition from a wide range of participants during procurement processes and support a value-for-money outcome.

While the Benefit Cost Ratio (BCR) is one of the indicators used to assess a project's viability, the traditional economic appraisal framework does not capture a range of quantitative and qualitative benefits that have been identified but which fall outside of the conventional framework. This includes safety of the highway, travel time reliability, crash reductions, economic development and freight efficiency.

Road projects constructed in difficult terrain will inherently have a lower BCR, as is the case here. Similarly, road projects addressing essential transport links where traffic volumes are significantly lower than in our urban centres will also have lower BCRs.

The proposal is justified by the limitations of the existing Great Western Highway infrastructure as described in Section 2.2 of the REF. Traffic growth is expected on the Great Western Highway through the proposal area. Without the proposal, the performance of the Great Western Highway is expected to deteriorate over the next 15 years and would approach operational capacity.

Rest areas

About 40 per cent of respondents raised concern or opposition to the inclusion of rest areas within the proposal.

The heavy vehicle rest areas have been located in accordance with the Heavy Vehicle Rest Stop Strategy for the Great Western Highway Upgrade Program. They address the need for a major Rest Area (Class 2) between the M4 Service Centre at Eastern Creek and the Caltex Yetholme Service Centre. Currently the driving time between these two major rest areas is in the order of two hours. The construction of the two proposed Heavy Vehicle Rest Areas in the Hartley Valley will reduce the travel time for heavy vehicles between major rest areas to in the order of one hour, which is the desirable standard.

A review of the estimated demand for the proposed heavy vehicle rest areas has resulted in:

- A reduction from 13 to 10 short term heavy vehicle parking spaces at the westbound rest area. This provides the opportunity to increase the number of light vehicle (currently seven) and caravan (currently five) parking bays in the detailed design phase of the proposal
- A reduction from 12 to nine short term heavy vehicle parking spaces at the eastbound rest area. This provides the opportunity to increase the number of light vehicle (currently four) and caravan (currently four) parking bays in the detailed design phase of the proposal.

Transport understands the concerns about noise, light spill, visual amenity and cleanliness of the proposed sites. The rest areas have been designed to 'fit into' the landscape and further work will be carried out throughout the detailed design phase of the project to reduce their impacts through enhanced urban design and landscaping.

Transport will continue consultation with the community in Hartley Valley, the Central west and the Freight transport industry to achieve the best outcome for all stakeholders.

Biodiversity

About 38 per cent of respondents raised concerns about the potential impact to the local platypus population. Respondents queried why this had not been assessed as part of the REF.

A Biodiversity Development Assessment Report (BDAR) was prepared to support the REF due to potential impacts to biodiversity. A BDAR requires assessment of how a proposal will avoid, minimise and offset impacts upon native vegetation or biodiversity listed under the NSW Biodiversity Conservation Act 2016 (BC Act) and the Biodiversity Conservation Regulation 2017.

Platypus are not listed as threatened under the BC Act or Regulation or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), so are not required to be assessed as an individual species under the BDAR process. They are however, protected under Schedule 5 of the BC Act as a native aquatic mammal. Surveys completed during initial biodiversity assessments did not identify platypus within the study area. However, subsequent investigations completed as part of the Addendum Biodiversity Development Assessment Report found individuals within the River Lett.

Since the REF display, Transport has carried out an additional assessment of the potential impacts of the proposal on Platypus (*Ornithorhynchus anatinus*) due to a number of recent sightings of the species recorded by the community within the proposal area near River Lett, the findings of which are presented in Section 5.1 and Appendix A (Biodiversity Addendum Report) of this submissions report.

Aboriginal heritage

About 55 per cent of the submissions received commented on the potential impacts on Aboriginal heritage.

Aboriginal heritage is a key consideration in the proposal development, beginning as part of the initial study area investigations in 2008 and continuing throughout corridor and route selection and into the concept design and REF stage.

Impacts to Aboriginal cultural heritage were assessed in accordance with the Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (Code of Practice) (DECCW, 2010a) and in consultation with Registered Aboriginal Parties (RAPs) (refer to Section 6.4 and Appendix G of the REF).

Safeguards and management recommendations have been developed in consultation with RAPs to avoid impacts where possible and where impacts are unavoidable, to effectively mitigate them (refer to Section 6.2 of this submissions report). Interpretive elements have been considered for design integration in the Hartley Valley, including public works of art, interpretive signage, bridges, earthworks and plantings (Safeguard AH04) to celebrate and acknowledge the Aboriginal history of the local area and today's Aboriginal community that connects with the area.

Additional consultation with RAPs is planned for future stages of the proposal consistent with the relevant guidelines. An Aboriginal Heritage Management Plan (AHMP) will also be developed in consultation with the RAPs to document standard procedures for unexpected finds procedure, detailed site salvage strategy, management and curation of salvaged Aboriginal objects, fencing and protective coverings, permissible activities and vehicle access inside protected Aboriginal areas.

Non-Aboriginal heritage

About 45 per cent of the submissions received commented on the potential impacts on non-Aboriginal heritage.

Transport acknowledges the historical significance and importance of the Hartley Valley to the local community. Reducing impacts on non-Aboriginal heritage items is a core consideration of the design development process.

Overall, given the constraints of the Hartley Valley and the incredibly rich heritage landscape along the GWH, the proposal achieves desirable outcomes by avoiding or mitigating significant impacts to the majority of heritage items within the construction footprint. The overall cumulative impact to historical heritage sites within the construction footprint from the proposal is assessed to be minor. Although the route has historically seen modifications and alignments over time in response to changes in technology and safety standards, these changes were generally minor and/or incremental in nature. There have been no major realignments of the Great Western Highway in recent decades, with the exception of the safety upgrades previously completed in the Forty Bends area beneath Hassans Walls.

Where there will be impacts on non-Aboriginal heritage, management and mitigation measures will be implemented to address these impacts based on the impact type and level as summarised in Section 6.2 of this submissions report.

Landscape character and visual impact

About 47 per cent of respondents expressed concern regarding the proposal's impacts on landscape character and visual amenity.

Transport has considered the heritage significance of Hartley Valley and acknowledges the scenic nature of the landscape which includes rural-residential and native woodland landscape characteristics. The urban design principles set out in Section 4 of Appendix L includes the development of a design that fits with the existing high visual qualities, ecology and character of the Hartley Valley and its setting (Objective 1). It also includes the objective to minimise impacts to the integrity of heritage sites, significant trees, and cultural values of the community within the proposal (Objective 2).

An Urban Design Plan will be prepared to facilitate an integrated urban design and engineering design outcome for the proposal and will detail the application of the design principles as identified in the REF.

Additional investigations since the REF

The following additional investigations have been carried out since the REF:

- Addendum Biodiversity Development Assessment Report – refer to Section 5.1 and Appendix B of this submissions report
- Addendum Non-Aboriginal heritage Report - refer to Section 5.2 and Appendix C of this submissions report
- Stage 2 Contamination Assessment - refer to Section 5.3 and Appendix D of this submissions report.

Next steps

Transport for NSW as the determining authority will consider the information in the REF and this submissions report and make a decision whether or not to proceed with the proposal.

Transport for NSW will inform the community and stakeholders of this decision and where a decision is made to proceed will continue to consult with the community and stakeholders prior to and during the construction phase.

Contents

Figures

Tables

Appendices

1. Introduction and background

1.1 The proposal

Transport for NSW (Transport) proposes to upgrade the Great Western Highway between Little Hartley and Lithgow, NSW (the proposal), located immediately to the west of the Blue Mountains within the Lithgow City local government area. The upgrade will reduce congestion, deliver safer, more efficient and reliable journeys for those travelling in, around and through the Blue Mountains, and better connect communities in the Central West. Key features of the proposal include:

- Upgrade of about 14 kilometres of the Great Western Highway between Little Hartley and Lithgow to a four lane divided highway with two lanes in each direction
- Provision of service roads
- Provision of two rest areas, one eastbound and one westbound
- Provision of five new bridges
- Upgrade of the existing bridge over River Lett.

The proposal has been designed in four sections to allow flexibility in construction staging and delivery and includes:

- Coxs River Road
- Little Hartley to River Lett Hill
- River Lett Hill to Forty Bends
- Forty Bends to Lithgow.

Subject to planning approval, construction of the proposal is planned to commence in 2022 and the current program would take about four years to complete.

A more detailed description of the proposal is found in the Review of Environmental Factors (REF) prepared by Transport in November 2021.

1.2 REF display

Transport prepared an REF to assess the potential environmental impacts of the proposed works. The REF was publicly displayed and feedback sought from the community for 55 days between 23 November 2021 and 16 January 2022.

The REF was published on the Little Hartley to Lithgow project interactive web portal at ***nswroads.work/gwhdwestconsult*** and made available for download. Hard copies of the REF were available for viewing at two locations, as detailed in Table 1-1, through the Hartley District Progress Association, and provided via mail upon request.

In addition to the public display, an invitation to comment was provided directly to identified stakeholders, including:

- Lithgow City Council
- Department of Planning and Environment (DPE) (formerly Department of Planning, Industry and Environment (DPIE))
- Environmental Protection Authority (EPA)
- Heritage NSW
- National Parks and Wildlife Services

- Hartley District Progress Association (HDPA)
- Hartley Trust Land Reserve – Crown Lands Management Board
- Affected property owners
- Blue Mountains City Council
- Central West Councils Joint Organisation
- Oberon Council
- Bathurst Regional Council
- Orange City Council,
- Blayney Shire Council
- Cabonne Council
- Cowra Council
- Lachlan Shire Council
- Dubbo Regional Council
- Forbes Shire Council
- Parkes Shire Council
- Mid-Western Regional Council.

Transport sought to make the information in the REF accessible to the community through its virtual consultation room and interactive web portal, which provided access to the REF in separate chapters and technical papers, an interactive map, fact sheets highlighting key issues in the REF, answers to frequently asked questions, videos and images.

Formal feedback was welcomed through the interactive web portal, email or mail during the consultation period.

The Program's email address, gwhd@transport.nsw.gov.au, was publicised for the community to contact the project team directly with queries, concerns and to make formal REF submissions. The project hotline was advertised for the community to contact the project team directly with queries and concerns, and to book consultation sessions. The hotline number is 1800 953 777.

Stakeholders and community members were encouraged to provide feedback on the REF, including the following items and impacts:

- Concept design
- Landscape character and visual impact
- Biodiversity
- Aboriginal heritage
- Non-Aboriginal heritage
- Noise and vibration
- Property and land use
- Traffic and transport
- Construction
- Connections
- Flooding, surface and groundwater
- Socio-economic
- Project justification
- Timing.

Six online and face-to-face consultation sessions were held in November and December 2021, as identified in Table 1-2.

Two general online sessions and two targeted online sessions were held. The targeted online sessions focused on the design features around Coxs River Road/Baaners Lane and Jenolan Caves Road/River Lett Hill.

Two face-to-face consultation sessions were held at Lithgow and at Hartley. Face-to-face sessions were divided into 45 minute time slots with bookings essential to ensure compliance with COVID restrictions on venue numbers. QR code sign in and proof of double vaccination status was required, in line with COVID requirements in place at the time.

Phone consultations were offered for anyone unable to engage either online or in person.

Table 1-3 provides a summary of the consultation activities carried out and their community reach.

Table 1-1: Display locations

Location	Address
Lithgow City Council Administration Centre	180 Mort Street, Lithgow NSW 2790
Lithgow Library Learning Centre	157 Main Street, Lithgow NSW 2790

Table 1-2: Community consultation sessions

Session type	Date and time	Location
General session	Tuesday 30 November 2021 6.30pm – 8.00pm	Online
	Saturday 11 December 2021 12.30pm – 2.00pm	Online
Targeted session Coxs River Road/ Baaners Lane	Thursday 2 December 2021 6.30pm – 8.00pm	Online
Targeted session Jenolan Caves Road/ River Lett Hill	Thursday 9 December 2021 6.30pm – 8.00pm	Online
Face-to-face session	Saturday 4 December 2021 1.00pm – 3.15pm	Lithgow Civic Ballroom – Tony Luchetti Showgrounds, George Coates Avenue, Lithgow
	Tuesday 7 December 2021 4.00pm – 7.45pm	Hartley Community Hall, Corner Great Western Highway and Mid Hartley Road, Hartley (Included a targeted consultation session from 4.00pm–5.00pm focused on Aboriginal cultural heritage).

Table 1-3: Consultation activities carried out during the REF public display period

<table>
<tr><th>Activity</th><th>Details</th></tr>
<tr><td>Media release</td><td>Two media releases were distributed via the Program website and through engagement with local media:
Little Hartley to Lithgow REF display period announced – community invited to have their say (23 November 2021)
Extension of the Little Hartley to Lithgow consultation period (13 December 2021).
Media releases are available at nswroads.work/gwhd</td></tr>
<tr><td>Newspaper advertisements</td><td>An advertisement about the Little Hartley to Lithgow REF and concept design display was published in:
Bathurst Western Advocate – 25 November 2021
Cowra Guardian – 25 November 2021
Forbes Advocate – 25 November 2021
Mudgee Guardian – 25 November 2021
Oberon Review – 25 November 2021
Parkes Champion Post – 25 November 2021
Lithgow Mercury – 26 November 2021
Dubbo Daily Liberal – 27 November 2021
Orange Central Western Daily – 27 November 2021
Blue Mountains Gazette – 1 December 2021
Penrith Western Weekender – 3 December 2021.
An advertisement to announce the extension of the consultation period was published in:
Bathurst Western Advocate – 22 December 2021
Blue Mountains Gazette – 22 December 2021
Oberon Review – 23 December 2021
Lithgow Mercury – 24 December 2021.
An advertisement to announce consultation was soon closing was published in:
Blue Mountains Gazette – 5 January 2022
Bathurst Western Advocate – 5 January 2022.</td></tr>
<tr><td>Radio</td><td>A thirty-second radio advertisement about the REF display was aired on four radio stations covering the Blue Mountains and Central West NSW.
Number of radio spots:<table><tr><th>Station</th><th>26–30 Nov</th><th>1–7 Dec</th><th>8–14 Dec</th><th>15–21 Dec</th><th>Total spots</th></tr><tr><td>WS FM (Sydney)</td><td>5</td><td>7</td><td>7</td><td>2</td><td>21</td></tr></table></td></tr>
</table>

Activity	Details					
	2LT (Lithgow/ Katoomba)	10	10	13	9	42
	Radio 1089 (Orange)	10	10	13	9	42
	2BS (Bathurst)	10	10	13	9	42
Community update	An eight-page community update with four-page map of the concept design was developed and delivered to residents from Little Hartley and Oberon to Lithgow. The community update was made available on the project web portal at **nswroads.work/gwhwestconsult**. Contacts registered to the Program database were sent an eNewsletter advising that consultation on the REF was open and providing a link to the community update online.					
Concept design fact sheet with reply paid feedback feature	An eight-page concept design fact sheet including a reply paid submission form which could be completed by hand and posted to the project team, was developed and delivered along with the community update to residents from Little Hartley to Oberon to Lithgow. The concept design fact sheet was made available on the project web portal at **nswroads.work/gwhwestconsult**. Hard copies of the concept design fact sheet were available at the static displays and at face-to-face consultation sessions.					
Fact sheets	Fact sheets that highlighted how the Little Hartley to Lithgow REF had considered and addressed key themes from previous consultation including landscape character and visual impacts, biodiversity, cultural heritage, and property were developed. These were available as individual fact sheets that could be downloaded from the project web portal at **nswroads.work/gwhwestconsult**. A 12-page booklet of the fact sheets which included a reply paid submission form which could be completed by hand and posted to the project team was also compiled and printed. The fact sheet booklet was available at the static displays and at face-to-face consultation sessions.					
Frequently Asked Questions (FAQs)	A four-page Frequently Asked Questions document was compiled and made available on the project web portal at **nswroads.work/gwhwestconsult**. Hard copies of the FAQs were available at the static displays and at face-to-face consultation sessions.					

Activity	Details
eNewsletters	Contacts registered to the Program database were sent eNewsletters highlighting: • Opening of consultation – 23 November 2021 • Update on static displays – 26 November 2021 • Invitation to additional targeted consultation session on Aboriginal cultural heritage at Hartley – 6 December 2021 • Consultation extended – 13 December 2021.
Poster	A poster promoting the REF display and consultation sessions was provided at the static displays at Lithgow Valley Plaza, Lithgow City Council and Lithgow Library Learning Centre.
Static displays	Static displays with communications material were provided at Lithgow Valley Plaza, Lithgow City Council and Lithgow Library Learning Centre. Hard copies of the REF were available for viewing at the Lithgow City Council and Lithgow Library Learning Centre displays.
Website and interactive web portal	The Great Western Highway Upgrade Program - Katoomba to Lithgow website**, nswroads.work/gwhd**, pointed to the project interactive web portal at **nswroads.work/gwhwestconsult** which provided information about consultation, including an online interactive map, booking form for consultation sessions, and online submissions form.
Social media (Facebook)	Facebook was used to provide information about the consultation period with four posts on the NSW Roads page staggered to appear over eight weeks: • Post 1 – 24 November to 2 December 2021 • Post 2 – 6 to 11 December 2021 • Post 3 – 14 – 20 December 2021 • Post 4 – 10 – 16 January 2022.
Briefing sessions	The following stakeholder briefing sessions were held, including a number of additional meetings organised after the close of the formal exhibition period. • Lithgow City Council administration – 10 November 2021 • Hartley District Progress Association Ltd – 25 November 2021 • Hartley Trust Land Reserve – Crown Lands Management Board – 29 November 2021 • Hartley Historical Society Advisory Committee – 20 December 2021 • Lachlan Shire Council – 21 December 2021 • Regional Development Australia Central West – 13 January 2022 • National Trust of Australia (NSW) – 21 January 2022 • Lithgow City Council – 8 February 2022 • Heritage NSW – 17 February 2022.

1.3 Purpose of the report

This submissions report relates to the REF prepared for the proposal 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 Transport. This submissions report is structured as follows:

- Section 2 summarises the issues raised by the community and provides responses to each issue
- Section 3 summarises the issues raised by agencies and provides responses to each issue
- Section 4 describes the changes to the proposal since the display of the REF
- Section 5 outlines the additional environmental assessment that has occurred since the display of the REF
- Section 6 provides a summary of all environmental safeguards and management measures for the proposal, including new or revised measures.

2. Response to community issues

Transport received 181 community submissions, accepted up until 16 January 2022. Appendix A lists the respondents and their allocated submission number. The table also indicates where the issues raised in each submission have been addressed in this report.

2.1 Overview of community issues raised

A total of 200 community submissions were received from 178 respondents in response to the display of REF. This included submissions from five community organisations and 173 individuals 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 Transport's response to these issues forms the basis of this section.

Of these submissions, 11 per cent supported the proposal, 9.5 per cent were neutral, 75 per cent did not support the proposal and 4.5 per cent did not offer their position.

The most common issues voiced by the community related to:

- Elements of the proposal description, including:
  - Connectivity between Baaners Lane and Browns Gap Road and the location of the Baaners Lane and Great Western Highway intersection
  - The inclusion of rest areas
  - Construction duration and staging of the broader four-part Great Western Highway Upgrade Program
  - Safety implications of the proposal speed limit
- The proposal need and options considered, including:
  - The preferred route
  - Alternative design options
  - The financial justification and business case ratio (BCR) of the proposal
- Aspects of biodiversity that may be impacted by the proposal, including:
  - The platypus population of the River Lett
  - Removal of threatened vegetation communities including the Yellow Box grassy woodland
- Potential impacts to sites of Aboriginal significance, in particular the Possum Dreaming site, Hearth and Platypus sites
- Potential impacts to Non-Aboriginal Heritage items, and the adequacy of the REF process in identifying these impacts
- Construction noise and vibration impacts on nearby sensitive receivers.

2.2 Need and options considered

2.2.1 Proposal justification

Submission number(s)

23, 31, 35, 36, 38, 40, 54, 60, 76, 79, 80, 86, 87, 90, 91, 95, 96, 97, 101, 102, 103, 107, 113, 119, 120, 124, 138, 142, 147

Issue description

Several respondents highlighted previous reports state the Great Western Highway would adequately meet the community needs until the early to mid-2030s, and suggested the proposed concept design is not suitable to the largely rural residential area and is over-engineered given the recent safety upgrades. The respondents request further justification for the proposal.

Response

The proposal is justified by the limitations of the existing Great Western Highway infrastructure as described in Section 2.2 of the REF. Traffic growth is expected on the Great Western Highway through the proposal area. Without the proposal, the performance of the Great Western Highway is expected to deteriorate over the next fifteen years and would approach operational capacity. Motorists travelling along Great Western Highway would experience congestion with little opportunities to overtake. Intersections would perform at levels below satisfaction resulting in delays.

The proposal would see a reduction in congestion in the Lithgow to Hartley area and improve the transport infrastructure for future traffic demands, particularly at intersections. The proposal would increase the number of lanes on Great Western Highway allowing traffic to flow smoothly. This would lead to reduced travel time for motorists travelling along Great Western Highway. When considered with other upgrades to the Great Western Highway planned between Katoomba and Lithgow, it is expected that motorists would experience a reduction in travel time of up to 10 minutes.

Traffic modelling was completed in Section 6.2 of the REF to determine the resilience of the current network under 2026 and 2036 traffic conditions. The main performance indicators for intersections are delays (measured in seconds) and level of service. Level of service provides a grading for the performance of the intersection from A to F with A meaning that intersection performance is considered to be operating well and F meaning intersection performance is unsatisfactory with excessive queuing. Similarly, for midblock performance an A grading would indicate that motorists are experiencing high operating speeds and free flowing conditions. An F grade would indicate that motorists are experiencing heavy congestion and unstable flows.

The results found that the existing network deteriorated considerably under 2026 and 2036 traffic conditions with midblock D-E gradings. Whereas, with the proposal the midblock performance during 2026 was an A grade and a B-C grade under 2036 traffic conditions.

Submission number(s)

23, 47, 97, 101, 102, 103, 105, 107, 109, 110, 112, 116, 123, 141

Issue description

Several respondents suggest that the Great Western Highway is unsuitable as a highway route for the future, particularly for heavy vehicles, due to the presence of speed zones, school zones and high density residential areas.

Respondents also suggested that the design should be suitable to a rural residential environment and should consider the unique heritage character of the area.

Response

The highway will be able to support safer and more productive vehicles to help unblock the east-west choke-point going to and from the Central West and Sydney. Based on transport studies and investigations, the Great Western Highway is the key corridor for transporting goods and people from the Central West to Sydney. Funding has been prioritised for the Great Western Highway to plan and deliver the upgrade of the highway between Katoomba and Lithgow.

As discussed in Section 2 of the REF, the options assessment considered the impacts on landscape character and visual amenity and non-Aboriginal heritage, with the proposal being identified as having the least overall impacts. Section 6.9.2 of the REF and Section 2 in Appendix L of the REF acknowledges the scenic nature of the landscape which includes rural-residential landscape characteristics. However, where impacts cannot be avoided safeguards and management measures will be in place to minimise visual impacts (refer to Section 6.2of this submissions report). This will include but is not limited to the preparation of an Urban Design Plan (Safeguard LV01), further refinements in the proposal during the detailed design phase, and landscaping planting and maintenance (Safeguard LV03).

Submission number(s)

23, 59, 101, 115, 144, 152

Issue description

Several respondents do not believe the travel time savings are significant enough to justify the proposal.

Response

Once the highway has been upgraded between Katoomba and Lithgow, road users will save at least 10 minutes in travel time and over 95 kilometres would be two lanes each way between Emu Plains and Wallerawang.

In addition to through traffic time savings, separating long distance and heavy vehicles from local traffic, pedestrians and cyclists will improve road safety by improving local connections via the service roads while limiting the need for locals to turn into high speed traffic travelling along the new Great Western Highway. The highway will be able to support safer and more productive vehicles to help unblock the east-west choke-point going to and from the Central West and Sydney.

Submission number(s)

131, 132

Issue description

Two respondents believe the proposal focuses on the interests of Bathurst at the detriment of Lithgow and the Hartley Valley. The respondents suggest the proposal overstates the benefits to Bathurst, and believes that future funding of the expressway will not continue.

Response

As the location of the proposal is in close proximity to Bathurst, the REF does briefly mention. Specifically, Transport acknowledges in the REF that the Forty Bends construction footprint does fall within the boundaries of the Bathurst LALC. However, the REF primarily assesses the impacts on communities within the operational footprint of the proposal, including Hartley Valley and Lithgow (refer to Figures 1-1 and 1-2 in the REF). Once operational, the proposal will support faster, more reliable and safer regional connections and links to and from destinations within the construction footprint and surrounding Blue Mountains, Lithgow, Central West, Orana and greater Sydney as a whole.

Submission number(s)

109, 119

Issue description

Two respondents suggest the proposal does not acknowledge the section of highway between Mount Victoria and Lithgow is part of the State Road network.

Response

Transport acknowledges the section of the highway is part of the State Road network and that the proposal is a part of the broader Great Western Highway Program between Katoomba and Lithgow. Due to the scale of the Program, the NSW government has conducted the upgrades to the Great Western Highway progressively over several stages. Transport has considered the cumulative impacts of the proposal within the broader program of work as summarised in Section 6.17 of the REF. Cumulative impacts will also be assessed in the environmental assessments for other proposals in the Great Western Highway Program.

Submission number(s)

59, 79, 91, 107, 110, 114, 134, 152

Issue description

Several respondents suggest the proposal is being driven by political interests and believe the proposal timing is related to political elections

Response

The proposal was developed to address issues relating to limitations of the existing infrastructure. Particularly, in response to anticipated traffic growth on the Great Western Highway through the proposal area, as outlined in Section 2.2 of the REF. The proposal objectives outlined in Section 2.3 of

the REF were created to address the current limitations of existing transport infrastructure. The proposal has been in planning since 2008 which does not align with any political cycle or political party. The NSW State Infrastructure Strategy and the Future Transport 2056 are both focused on long term infrastructure investment and land-use planning. Meeting future transport challenges remains the focus of the initiatives, solutions and actions of Transport today.

Submission number(s)

76

Issue description

The respondent believes the proposal is tied to Commonwealth funding.

Response

The Federal Government has committed $2.03 billion towards upgrading the Great Western Highway between Katoomba and Blackheath, and between Little Hartley and Lithgow.

Submission number(s)

12

Issue description

The respondent suggests an increase in electric car use will reduce the need for the proposal.

Response

The increased production and adoption of electric vehicles (EVs) is anticipated to mean that a greater number of EVs would use the proposal roads in the future. Notwithstanding this, a shift to EV use will not reduce the traffic demand on the proposal roads.

Submission number(s)

131

Issue description

The respondent suggests the Central West population is unlikely to grow in future years due to climate change and water insecurity predictions. The respondent suggests if there was population growth the Central West would become self-sustaining, and there would be little need to travel to Sydney.

Response

The Central West is NSW's third largest regional centre and contributes 12 per cent gross regional product to the state. The region is expecting significant growth during the next 20 years with population growth of 7.6 per cent and dwellings increasing by 12 per cent. This growth needs to be met with adequate infrastructure that services the region. The upgrade will support the region's future population and growth in key industries including agribusiness, manufacturing, mining and tourism.

2.2.2 Proposal objectives

Submission number(s)

53, 79, 97, 101, 102, 103, 107, 109, 110, 112, 116, 123, 141

Issue description

Several respondents note that there is no clarification regarding how the proposal will deliver freight benefits to the Central West, and that freight interests take precedence over the community.

Response

The proposal objectives are provided in Section 2.3.1 of the REF. A key objective of the proposal is to enhance the liveability and be sensitive to the unique environmental and cultural assets along the corridor.

The proposal would provide improved facilities for the movement of freight between the Central West and Sydney while enhancing accessibility and improving road safety in the area. The highway is being designed to carry the safest and most productive heavy vehicles, which means fewer heavy vehicles on the road and a safer road environment for local communities and motorists. This includes B-doubles up to 26 metres and more modern, productive vehicles up to 30 metres long.

Submission number(s)

16, 25, 37, 38, 40, 53, 80, 86, 90, 91, 95, 96, 102, 105, 113, 138

Issue description

Several respondents suggested prioritisation has been unfairly skewed to traffic and transport issues, and environmental and social objectives have not been adequately considered.

One respondent suggests that the design of the proposal will cause irreversible damage to a large area of land. The respondent does not believe the proposal will meet its objective to minimise impacts to the integrity of heritage sites, significant trees and cultural values of the community.

Response

The proposal was developed to address issues relating to limitations of the existing infrastructure. Particularly, in response to anticipated traffic growth on the Great Western Highway through the proposal area, as outlined in Section 2.2 of the REF. The proposal objectives outlined in Section 2.3 of the REF were created to address the current limitations of existing transport infrastructure. In particular, the proposal aims to improve the overall safety of the traffic network for all users and enhance liveability and be sensitive to the unique environment and cultural assets along the corridor.

The environment was considered in Section 6.1 of the REF, and assessments were carried out in line with the Environmental Planning and Assessment Act 1979. Additionally, the proposal incorporates aspects of Ecologically Sustainable Development. Ecologically sustainable development (ESD) is development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends. The principles of ESD have been an integral consideration throughout the development of the proposal.

As summarised in Section 6.5 and Appendix H of the REF, Transport acknowledges that the proposal would have direct and indirect impacts to non-Aboriginal heritage within the construction footprint. Management and mitigation measures will be implemented to address these impacts based on the

impact type and level, including but not limited to archival recording, archaeological test excavation, landscaping and sympathetic plantings, monitoring of ground disturbance works and engagement of subject matter experts (such as heritage structural engineer and an arborist) where appropriate (refer to Section 6.5.4 of the REF).

Additionally, the community were consulted with throughout the proposal planning and design process. Transport has carried out a number of community consultation activities to increase public awareness of the proposal and seek community input and feedback. A community consultation and stakeholder engagement plan (communications plan) was developed and implemented to guide consultation activities. Transport will continue to work closely with the community and relevant stakeholders through all stages of the proposal.

Submission number(s)

76

Issue description

The respondent believes the proposal will not provide tourism benefit to the area.

Response

The Tourism and Transport Plan (Transport for NSW, 2018) (a companion document to Future Transport Strategy 2056) recognises the connection between transport and tourism and identifies the potential to support and enhance existing tourism as well as create new economic development opportunities. The plan includes the following four customer outcomes:

- Customer Outcome 1: Enhancing the Visitor Experience
- Customer Outcome 2: Greater access to more of NSW
- Customer Outcome 3: Making transport the attraction
- Customer Outcome 4: A seamless experience.

By improving transport infrastructure on the main route to the Central West, the proposal aligns with Customer Outcome 2. There may also be opportunities to contribute to Customer Outcomes 1 and 3 as the proposal development process moves forward.

Submission number(s)

12, 23, 27, 28, 31, 35, 46, 54, 58, 76, 101, 103, 109, 110, 112, 119, 123, 131, 132, 141, 142, 152, 154

Issue description

Several respondents commented that the proposal would not achieve its purpose of improving connection and journey times between Sydney and the Central West due to the traffic conditions between Katoomba and the M4. Respondents stated that if the Great Western Highway Upgrade Program does not achieve the stated outcome of improved travel time between Katoomba and Lithgow as it does not connect, the enhanced travel times through the Valley will be minimal.

Response

In addition to a travel time saving in the order of 10 minutes on completion of the broader Great Western Highway Upgrade Program, the Traffic and Transport assessment (Section 6.2 and Appendix E of the REF) demonstrates significant improvements in level of service and road safety.

The improvements will provide a high level of service for the Great Western Highway to at least 2036. The Level of Service (LoS) for mid block sections improve from currently LoS D (ie near capacity and an accident study required) to LoS A (Good operation) or LoS B (Acceptable delays and spare capacity) in 2036. The proposal is also expected to reduce the Fatal and Serious Injury Rate by 65 per cent and the Total Crash rate by 57 per cent.

The travel time savings will be more beneficial during holiday and weekend periods where there are more vehicles on the road causing congestion.

Submission number(s)

49

Issue description

The respondent requests clarification regarding Transport's claim that the proposal will better connect communities in the Central West.

Response

The Great Western Highway services freight, tourist, and general traffic, with varying traffic volumes from about 12,000 vehicles near Little Hartley and about 11,000 vehicles per day near Lithgow and up to 20,000 vehicles per day in the Blue Mountains. In particular, there is a relatively high proportion of heavy vehicles (between 12 per cent and 24 per cent), reflective of the 18,000 tonnes of freight transported daily between the Central West and Sydney.

Traffic growth is expected on the Great Western Highway through the proposal area. Without the proposal, the performance of the Great Western Highway is expected to deteriorate over the next 15 years and would approach operational capacity. Motorists travelling along Great Western Highway would experience congestion with little opportunities to overtake. Intersections would perform at levels below satisfaction resulting in delays.

The proposal would increase the capacity of the Great Western Highway which would reduce congestion and improve intersection performance. The proposal would increase the number of lanes on Great Western Highway allowing traffic to flow smoothly. This would lead to reduced travel time for motorists travelling along Great Western Highway. When considered with other upgrades to the Great Western Highway planned between Katoomba and Lithgow, it is expected that motorists would experience a reduction in travel time of up to 10 minutes.

2.2.3 Great Western Highway Upgrade Program

Submission number(s)

2, 20, 23, 25, 26, 31, 35, 36, 37, 38, 39, 40, 46, 47, 50, 53, 54, 55, 56, 58, 59, 62, 69, 74, 76, 79, 80, 86, 87, 89, 90, 91, 95, 96, 100, 102, 103, 105, 106, 107, 108, 109, 112, 113, 114, 115, 116, 119, 120, 124, 127, 129, 130, 131, 132, 133, 134, 135, 137, 138, 143, 144, 145, 147, 154, 163, 180

Issue description

Several respondents suggested that Transport's first priority should be upgrading the Blackheath section (Central Section) of the highway as this is a key pinch point. The respondent suggests this could be completed by 2026/27 at a cost of $4B (ie about 40 per cent of total cost).

Response

There are four proposed sections of the Great Western Highway Upgrade Program between Katoomba and Lithgow:

- Medlow Bath Upgrade - being assessed and determined through an REF under Division 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act)
- East Section - Katoomba to Medlow Bath and Medlow Bath to Blackheath - being assessed and determined through an REF under Division 5.1 of the EP&A Act
- Central Section - Blackheath to Little Hartley - being assessed and determined through an Environmental Impact Statement (EIS) under Division 5.2 of the EP&A Act
- West Section - Little Hartley to Lithgow - being assessed and determined through an REF under Division 5.1 of the EP&A Act (the proposal).

Transport acknowledges the Central Section of the Great Western Highway Upgrade Program, which includes Blackheath, will have a large impact on traffic efficiency. It is also the most complex and time-consuming section of the Great Western Highway Upgrade Program for Transport to deliver. If it were completed first, the restrictions to efficiency would shift to Medlow Bath and River Lett Hill. However, the public expectation on the completion of the tunnelled Central Section would be of a high standard, four lane highway from Katoomba to Lithgow.

Taking advantage of the long development period for tunnel projects, the East and West Sections can be developed and delivered before the completion of the Central Section and meet the Government's and community's expectations.

2.2.4 Business case and proposal costs

Submission number(s)

20, 23, 40, 46, 90, 91, 100, 102, 128, 131, 132, 135, 147

Issue description

Several respondents raised concerns about the cost of the proposal, including the following:

- Funds could be better spent on hospital infrastructure
- The cost of the Katoomba to Lithgow Upgrade likely to be a minimum of $9B, but these costs would likely rise (based on previous large infrastructure projects such as WestConnex)
- The cost of the proposal is unjustified given the recent Forty Bends upgrade
- The proposal is not financially justified when there was a multi-million dollar upgrade to the Great Western Highway only three years ago.

Response

Estimates for the various projects forming the Katoomba to Lithgow Great Western Highway upgrade are developed by professional estimators, are reviewed by independent verifiers and revised regularly as the development of the projects progress.

Each road construction project is unique and comparison with other projects is rarely valid. The circumstances that result in a project cost overrun are generally limited to that project.

The tendering process used by Transport is overseen by a probity consultant and rigorous cost control management will be employed on all the Great Western Highway upgrade projects. Transport utilises a competitive tender process which allows the market to dictate the cost of projects.

Once operational, the proposal would have long term positive impacts on access and connectivity for local and regional communities, business, and industry. Traffic modelling has indicated that the proposal will improve travel times along the Great Western Highway and is predicted to reduce the total crash rate by 57 per cent between Little Hartley and Lithgow. Reduction of through traffic, including heavy vehicles within the Little Hartley village would support safer access and enhanced amenity for residents and businesses within the village.

The proposal does not include further upgrades to the Forty Bends section of the highway, only adjustments to line markings and medians where the upgraded sections would tie in.

There have already been important safety improvements delivered through the safety upgrade program along the Great Western Highway at Blackheath, Mount Victoria and Forty Bends. This work has seen improved road surfaces, intersection upgrades, and lane widening delivered as part of the $250 million investment by the Australian and NSW governments. However, as discussed in Section 2.2 of the REF, there are limitations of the existing Great Western Highway infrastructure.

Traffic growth is expected on the Great Western Highway through the proposal area. Without the proposal, the performance of the Great Western Highway is expected to deteriorate over the next fifteen years and would approach operational capacity. The proposal would increase the capacity of the Great Western Highway which would lead to reduced travel time for motorists travelling along Great Western Highway. Crash reduction analysis also indicates that the proposal would reduce the total number of crashes on the Great Western Highway between Little Hartley and Lithgow by 57 per cent.

Submission number(s)

12, 20, 23, 25, 26, 28, 31, 35, 36, 37, 38, 40, 46, 47, 49, 53, 54, 55, 56, 58, 59, 62, 69, 74, 76, 79, 80, 86, 87, 89, 90, 91, 95, 96, 100, 101, 102, 103, 105, 106, 107, 108, 109, 112, 113, 114, 116, 119, 120, 124, 131, 132, 138, 142, 145, 147, 152, 154, 156, 162, 163, 176, 179, 180

Issue description

Several respondents note that there is no publicly available material that shows Transport have completed a credible business case and suggests this needs to be completed for each alternative or option that has been considered.

Several respondents request that the Benefit Cost Ratio (BCR) of the proposal is made publicly available.

Response

A business case has been prepared for the Great Western Highway Upgrade Program is under consideration by government. The East Section and West Section (the proposal) business cases have been accepted by INSW. Given the level of information within, the business case will maintain its confidentiality to help drive value-creating competition from a wide range of participants during procurement processes and support a value-for-money outcome.

While the Benefit Cost Ratio (BCR) is one of the indicators used to assess a project's viability, the traditional economic appraisal framework does not capture a range of quantitative and qualitative benefits that have been identified but which fall outside of the conventional framework. This includes

safety of the highway, travel time reliability, crash reductions, economic development and freight efficiency.

Road projects constructed in difficult terrain will inherently have a lower BCR, as is the case here. Similarly, road projects addressing essential transport links where traffic volumes are significantly lower than in our urban centres will also have lower BCRs.

All Transport business cases are developed in alignment with the Transport for NSW Business Case Guide (Transport for NSW, 2021), which supplements the general principles of existing NSW Government business case guidance to ensure due consideration is given to sufficiently assess a project's viability. This is independently assured by INSW.

Further, in determining the viability of a road project, the issue of route standards also needs to be taken into account as each road project forms part of a National or State route.

Submission number(s)

23

Issue description

The respondent highlights the lower traffic volume at the western end of the Great Western Highway Upgrade Program corridor compared to the eastern end, and does not believe these comparatively lower volumes justify the proposed expenditure on the proposal.

Response

As discussed in Section 6.2 and Appendix E of the REF, average daily traffic volumes in the West section range from 10,390 to 12,140 for weekdays and from 11,400 to 12,430 on weekends.

The higher traffic volumes along with road safety improvements and the need to establish a route standard together justify the upgrade. As noted above, Transport also had a credible business case to justify the need for the proposal.

Submission number(s)

74

Issue description

The respondent believes money has been wasted on previous surveys.

Response

Environmental investigations have been carried out to support each stage of the proposal and gain a thorough understanding of the constraints and issues. Completing environmental investigations is integral to the proposal development and in Transport meeting its requirements under Section 5.5 if the EP&A Act. A deep understanding of the potential impacts ensures that the management measures developed address the impacts specific to the proposal and the community.

2.2.5 Alternatives to the proposal

Submission number(s)

11, 14, 23, 41, 70, 76, 107, 109, 119, 127, 142, 143, 144, 146, 147, 176, 177

Issue description

Several respondents requested that alternatives be considered, including the following:

- An alternative route that would align from the base of Mount Victoria alongside Mount York and cut through mid-Hartley
- An alternative route with minimal traffic disruption, easier and more cost-effective environmental outcomes
- An alternative route that would avoid the Hartley Valley to reduce noise and vibration impacts in the Valley
- An alternative route that would avoid heritage impacts
- Alternatives more suitable for the area
- One respondent provided detail of a proposed alternative configuration
- Building a tunnel instead of the proposal
- A route utilising Transport land as much as possible
- A solution of traffic bypassing the Hartley Valley.

Response

As discussed in Section 2.4.1 of the REF, a thorough corridor and route selection process was carried out for the proposal.

The NSW Government first announced an upgrade from Mount Victoria to Lithgow in May 2008. The development of route options within the proposal corridor involved community submissions and involvement in workshops as outlined in Section 2.4.1 of the REF. Four corridors were identified within the initial study area, along with the Newnes Plateau alternative corridor. The Newnes Plateau route was investigated and found not to be viable as the Department of Defence required the necessary land at Marangaroo. Routes to the north and south of the Department of Defence land were considered but found not to be viable due to increased road length, steep grades, and travel time impacts. In addition, the Newnes Plateau option would not offer improved connectivity to Jenolan Caves Road and Oberon, from which a significant amount of tourism traffic is generated, as well as timber and quarry-related freight.

Following further community consultation and a technical workshop was held in November 2009 in which the route options were assessed based on a previously established evaluation criteria considering business impacts, residential impacts, visual impacts, heritage, ecology, sense of place and value for money. The Preferred Route was used as a basis for the development of the Concept Design. The preferred option corridor was selected as it would avoid potential environmental, social, and topographical constraints. The preferred option route would also pose the least issues from a constructability standpoint and provide the fastest travel times. In 2013, the preferred route was incorporated into the *Lithgow Local Environmental Plan 2014* (Lithgow LEP).

The proposal is justified by the limitations of the existing Great Western Highway infrastructure as described in Section 2.2 of the REF. Traffic growth is expected on the Great Western Highway through the proposal area. Without the proposal, the performance of the Great Western Highway is expected to deteriorate over the next 15 years and would approach operational capacity. Motorists travelling

along Great Western Highway would experience congestion with little opportunities to overtake. Intersections would perform at levels below satisfaction resulting in delays. The proposal would see a reduction in congestion in the Lithgow to Hartley area and improve the transport infrastructure for future traffic demands.

Transport is sensitive to the area's natural environment and is committed to minimising environmental impacts. Detailed environmental studies have been carried out, as described in Section 6 of the REF. Efforts have been made to avoid impacts to important ecological and heritage areas. The proposal concept design utilises land already owned by Transport wherever possible. While unavoidable in some locations, impacts would be mitigated and/or managed in accordance with best practice guidelines. Refinements will be further considered during detailed design to minimise impact where possible.

Transport acknowledges that the proposal will impact traffic during its construction phase, however, impacts will be minimised by the safeguards and management measures outlined in Section 6.2of this submissions report.

Traffic modelling indicates that traffic growth is expected on the Great Western Highway through the proposal area (refer to Section 6.2 of the REF). Unfortunately, bypassing the traffic through Hartley Valley is not a viable solution. However, by increasing the capacity of the Great Western Highway, the proposal would benefit the community by reducing congestion and improving intersection performance.

Like it is for the construction of a road, the construction of a tunnel bypass is determined based on a number of constraints, including the potential biodiversity and heritage impacts of the development. The substantial design effort, options analysis and independent reviews carried out by Transport in the development of the reference design for the proposal has concluded that the option presented in the REF would best meet the proposal objectives and deliver improvements to both regional and local traffic. The proposal (West Section) utilises an existing corridor and road footprint as much as possible which minimises its environmental impacts on the Hartley Valley. From an engineering perspective, it is much simpler and cost effective to construct and design the proposed road rather than a tunnel under the valley.

Submission number(s)

16, 24, 33, 57, 102, 107, 114, 124, 137, 147

Issue description

Several respondents state the proposal inadequately considered railway options for freight transport. The respondents suggest this goes against the Regional NSW Services and Infrastructure Plan which aims to produce a modern multi-modal freight transport network.

Several respondents believe rail options should be exhausted before road infrastructure is expanded. The respondents suggest Lithgow could be used as a hub where freight is loaded from rail to trucks and vice versa.

Response

The NSW Government is committed to moving more freight from road to rail and already invests in the rail freight network to increase capacity, but this is not a substitute for investing in our road freight network. The Great Western Highway upgrade is being developed alongside long-term rail options, as both are needed to meet future demand and address current issues around congestion, journey reliability and safety.

The roads and trains arms of Transport for NSW are working closely on developing a multi-modal strategy for east west connections between Sydney and the Central West that makes the most of road and rail for both passengers and freight. About half the freight on the Great Western Highway is carried on the road network and about one third of the road freight between Lithgow and Katoomba begins or ends its journey in the mountains. The type of freight that needs to move by road includes refrigerated goods, fuel, construction materials from local quarries, livestock, commercial and retail goods. Much of this freight requires direct access to freight hubs, such as retail precincts, light industrial areas or home deliveries. Bulk goods such as export containers, steel, grains, and coal will continue to rely on the rail line and 90 per cent of freight containers moving between the Central West and Sydney are already transported by rail.

The Blue Mountains line is a shared rail corridor used by passenger and freight services. Both freight and passenger services are driven by demand and timetables are developed to move both freight and passenger services across the broader rail network efficiently. The rail line is providing a reliable service for Blue Mountains commuters, however the highway will remain a vital link for the Central West and the Blue Mountains. The rail corridor is constrained due to the alignment of the Great Western Highway, the Blue Mountains National Park, and the topography. The rail line is being upgraded in sections to allow for wider trains that currently use the Sydney Trains network, so they will be able to use tunnels within the Blue Mountains.

The NSW Government has committed to investing in improvements to the rail corridor for commuters through the Faster Rail Network Strategy and is also developing a Regional Rail Strategy.

Submission number(s)

2, 12, 23, 29, 79, 107, 109, 119, 133, 137, 142, 145, 147, 170, 176

Issue description

Several respondents suggested that adding a lane to the existing highway would be a more suitable option. Suggestions raised included:

- An alternative design would be more suited that utilises the existing highway as much as possible and minimises the footprint
- Would result in less service roads becoming Council's responsibility to maintain
- Would better complement historic vistas and the existing environment, have less noise impacts, and be safer for the community and visitors at a lower cost
- Utilise the existing highway between Victoria Pass and River Lett Hill as the eastbound two-lane carriageway, and a new westbound two-lane carriageway should be built.

Response

As discussed in Section 2 of the REF, a robust options assessment has been conducted in consultation with the community and the current route has been identified as the most appropriate option. Where there are impacts, safeguards and management measures (as presented in Section 6.2 of this submissions report) will be implemented to minimise and/or mitigate them.

The addition of a lane to the existing highway does not address the safety concerns at the intersections between local roads and the Great Western Highway. The proposal has been determined by Transport to provide the safest movement of traffic through the separation of carriageways for local and through traffic and the implementation of contemporary design standards. In particular, the design provides an additional climbing lane on River Lett Hill to separate slower trucks and other

vehicles and allow for safer overtaking. The Great Western Highway will be used for through traffic, whilst service roads will be used primarily for local traffic.

As discussed in Section 2 of the REF, the options assessment considered the construction footprint, with the proposal being identified as having the least overall impacts. Transport acknowledges there are inevitable impacts associated with the proposal. Where there are impacts, there will be safeguards and management measures in place to minimise them (refer to Section 6.2 of this submissions report).

The proposal retains sections of the existing highway as service roads to property access. This minimises direct access to the Great Western Highway from adjacent properties, which in turn ensures the safety of local residents. The provision of service roads is in line with Transport's objective to maintain property access for residents in the construction footprint.

The maintenance of service roads will be negotiated between Transport and Lithgow City Council, in accordance with Safeguard SE01 in Section 6.2 of this submissions report.

The REF design proposes an upgrade of about 14 kilometres of the Great Western Highway between Little Hartley and Lithgow to a four-lane divided highway. To achieve the design criteria set out in Section 3.2.1 of the REF and the strategic needs of the proposal defined in Section 2.1 of the REF the layout and alignment defined in the REF is proposed. Refer to Section 2.2 of the REF for the limitations of the existing Great Western Highway. It would not be prudent to attempt to retrofit the existing infrastructure with the proposed design criteria and known forecast in traffic numbers.

Submission number(s)

11, 23, 35, 41, 47, 64, 65, 106, 109, 119, 125, 129, 131, 134, 156

Issue description

Several respondents suggested that the Northern Route option that follows Bells Line of Road should be progressed as the preferred option, suggesting the cost would be lower than the proposed tunnel under Mount Victoria (Great Western Highway Upgrade Program Central Section) and the proposal.

Response

Based on transport studies and investigations, the Great Western Highway is the key corridor for transporting goods and people between the Central West and Sydney and traffic volumes are expected to continue to increase.

The Great Western Highway through the Blue Mountains is already at capacity during certain periods. The upgrade provides opportunities to improve the movement of local residents and boost the tourism industry by relieving congestion and providing safer, more reliable journey times.

Even if the Bells Line of Road was upgraded – and early indications suggest this would be at a cost far in excess of this program – significant traffic volumes would still remain on the Great Western Highway.

An upgrade of the Bells Line of Road would also potentially have a significant impact on the World Heritage Area and has extremely challenging terrain.

Upgrading the Bells Line of Road remains a longer term priority for the NSW Government.

Submission number(s)

79, 109, 115, 119, 125, 131, 132, 133, 142, 155

Issue description

Several respondents suggested that the Darling Causeway should be progressed as the preferred route, suggesting the cost would be lower than the proposed tunnel under Mount Victoria (Great Western Highway Upgrade Program Central Section) and the proposal.

Response

As discussed in Section 2 of the REF, a robust options assessment has been conducted in consultation with the community and the current route has been identified as the most appropriate option. Two corridor options along the Darling Causeway were considered as part of the corridor option assessment described in Section 2.4 of the REF. The topographical constraints of the route and the potential for snow and ice impacts along foothills of the escarpment were key reasons this route is not considered appropriate as the main carriage way between Sydney and the Central West. This route would also result in operational noise impacts to sensitive receivers who are currently unaffected by traffic noise, as well as impact several Aboriginal heritage sites. There are potential impacts on biodiversity, including impacts to endangered ecological communities and threatened species and potential severance of the wildlife corridor with potential impacts to fauna passageway. Notably, this route is heavily constrained due to its proximity to the Blue Mountains National Park and World Heritage Area.

Submission number(s)

109, 119, 142

Issue description

Three respondents request for the proposal to bypass the Hartley Historic Village.

Response

The options assessment conducted for this proposal has considered other design options, with the proposal being identified as having the least overall impacts (refer to Section 2 of the REF). The proposal has been designed to avoid direct impacts to the heritage buildings in the Hartley Historic Site, however Transport acknowledges there may be indirect impacts associated with the proposal. Where there are impacts, there will be safeguards and management measures in place to minimise them (refer to Section 6.2 of this submissions report). This will include earthworks to blend the required batter slopes into existing topography where possible (Safeguard NH10), dilapidation reports to determine the sensitivity of buildings in Hartley Historic Village to vibration impacts during construction or operation (Safeguard NH13), and test excavation or monitoring of ground disturbance works by an appropriately qualified archaeologist (Safeguard NH15). Options to reduce the construction footprint within the SHR curtilage will be considered at Hartley Historic Village (Safeguard NH06).

Submission number(s)

23

Issue description

The respondent noted a design option at Coxs River Road that had previously been rejected by the Department of Planning is now included in the Concept Design.

Response

This design option has been reconsidered, as staying on the existing alignment would not meet the proposal objectives of improving transport network performance and efficiency along the corridor between Katoomba and Lithgow. Additionally, the heritage constraints in this location, namely the Harp of Erin and Ambermere, do not allow sufficient space for four lanes along the existing alignment. The proposed alignment meets the proposal objectives while reducing heritage impacts.

Submission number(s)

119

Issue description

The respondent suggests a land bridge would reduce the need to acquire parcels of land to offset the impacts to Yellow Box Trees.

Response

This option is not feasible or necessary. Any type of bridge would be elevated and therefore visually intrusive. The section of the design where land would be acquired is in cut and would be visually screened from Blackmans Creek Road residents.

2.2.6 Intergenerational equity

Submission number (s)

131

Issue description

The respondent suggests the proposal will not open up the Central West but will instead increase intergenerational debt and limit the communities' economic capacity to respond to an ageing population and public health crisis.

Response

Socio-economic impacts of the proposal are discussed in Section 6.10 of the REF, and intergenerational equity is addressed in Section 8.2.1.

It is acknowledged that the proposal would have some negative social impacts during the construction phase of the proposal, however once operational, there would be long term positive impacts on access and connectivity for local and regional communities, business, and industry. The proposal represents a cost-efficient investment in public infrastructure that would maximise the long-term social and

economic benefits, while minimising the long-term negative impacts on communities and the environment. Traffic modelling carried out for the proposal has demonstrated that, without the proposal travel times and intersection performance would deteriorate to unacceptable levels. By improving local and regional transport facilities, the proposal would better enable movement of people, goods and services, leading to improved economic outcomes.

The Great Western Highway Upgrade Project has been designed to accommodate for the needs of current and future population and traffic use and improve the road safety and level of service of the Great Western Highway. As noted in Section 8.2.1 of the REF, the proposal would not result in any impacts likely to adversely impact health, diversity, or productivity of the environment for future generations.

Submission number (s)

142

Issue description

The respondent suggests the proposal is not the optimal corridor and therefore does not meet the requirements for intergenerational equity.

Response

Proposal alternatives and options considered are detailed in Section 2.4 of the REF and intergenerational equity is addressed in Section 8.2.1. Amongst the alternatives considered, the proposal has been identified as having the least overall environmental impacts.

Table 2-3 of the REF details the extensive options analysis for the proposed route that have been carried out since 2008. The development of route options has been carried out in consultation with the community and supported by study area investigations. The preferred route was selected based on established evaluation criteria considering business impacts, residential impacts, visual impacts, heritage, ecology, sense of place and value for money.

As noted above, the proposal has been designed to accommodate for the needs of current and future population and traffic use and improve the road safety and level of service of the Great Western Highway. The proposal would not result in any impacts likely to adversely impact health, diversity, or productivity of the environment for future generations.

2.3 Proposal description

2.3.1 Construction

Submission number(s)

5, 6, 7, 17, 18, 21, 22, 64, 75, 159, 178

Issue description

Several respondents support the proposal and request that construction of the proposal commences as soon as possible. One respondent believes the proposal should have commenced ten years ago.

Response

The NSW Government first announced planning for an upgrade from Mount Victoria to Lithgow in May 2008. The proposal is highly complex and is located within a sensitive environment. The proposal has required considerable planning and consultation throughout the options assessment due to the highly complex nature of the Great Western Highway Upgrade Program and its location within a unique and highly sensitive environment. The Great Western Highway Upgrade Program will be delivered in stages to minimise environmental, social and heritage impacts and ensure that optimum design outcomes are achieved. The West Section (the proposal) is less complex in nature and can be developed and delivered before the completion of the more complex sections of work and meet the Government's and community's expectations.

Transport acknowledges the respondents' support for the proposal. Subject to planning approval, construction of the proposal is planned to commence in 2022 and is expected to be open by the end of 2026.

Submission number(s)

97

Issue description

The respondent states that the proposal timing is too sudden.

Response

The NSW Government first announced planning for an upgrade from Mount Victoria to Lithgow in May 2008. The first stages of community consultation commenced in June 2008 with identification of an initial study area for the Great Western Highway Upgrade Program.

The road corridor was rezoned as SP2 Infrastructure in the Lithgow LEP, which characterises the zone as a 'special purpose' zone Road and Traffic Facility related uses.

Community engagement was identified by Transport as an essential component of the proposal development. Since then, and throughout the options assessments and proposal development, as described in Section 5 of the REF, substantial consultation has been carried out with the community and relevant stakeholders regarding the Great Western Highway Upgrade Program and the proposal specifically. Transport is committed to further consultation with the community and other

stakeholders regarding future proposal development. Communication will be facilitated through the CCS as per Safeguard SE01 in Section 6.2 of this submissions report.

Submission number(s)

6, 28, 40, 58, 74, 91, 102, 103, 105, 115

Issue description

Several respondents express concern regarding the long period of construction activities associated with the proposal. One respondent believes that construction would be disruptive and requests a date of completion of construction of the proposal. Two respondents are concerned that construction activities will disrupt traffic in the Hartley Valley for years.

Response

Subject to planning approval, construction of the proposal is planned to commence in 2022 and is expected to be open by the end of 2026.

Measures to avoid or minimise potential impacts during construction have been considered during the options process and development of the concept design, and have continued through the detailed design phase. Impacts during construction will be minimised by implementing the Construction Environment Management Plan (CEMP) as per environmental safeguard GEN01 in Section 6.2 of this submissions report. As a minimum, the CEMP will address any requirements associated with statutory approvals, issue-specific environmental management plans, roles and responsibilities, and details of how the proposal will implement the identified safeguards outlined in the REF.

It is acknowledged that the proposal will result in the generation of construction vehicles and some disruption to traffic flow (refer to Section 6.2.3 of the REF). Construction traffic would increase volumes on the Great Western Highway of between two per cent to eight per cent depending on package of works and locations. These increases would be minor and not impact the operational performance of the Great Western Highway.

Throughout construction the proposal would aim to maintain one travel lane in each direction (see Safeguard TT03 in Section 6.2 of this submissions report). However, there will be some instances during off peak times that lane closures or contraflow arrangements are required to complete works such as pavement resurfacing on the Great Western Highway. A Traffic Management Plan (TMP) will be prepared for the proposal in accordance with Safeguard TT01, which will require the contractor to develop measures to safely manage traffic flows and maintain access for all road users, including pedestrians and cyclists and to consult and inform the local community of impacts to the local road network.

Measures to mitigate the visual impacts during construction are set out in Safeguard LV05 in Section 6.2 of this submissions report. This will include but is not limited to providing suitable barriers to screen views from adjacent areas during construction, returning temporary works areas to at least their pre-construction condition progressively throughout the works or once construction is complete, identifying, protecting and retaining existing trees located within the ancillary facility areas, and screening or diverting temporary lighting.

Once completed the proposal will deliver benefits to the local community such as improved road safety and increased capacity of the Great Western Highway to cater for traffic movements for current and future generations.

Submission number(s)

15

Issue description

The respondent requested clarity on the timing of construction, particularly in relation to the section of the proposal closest to their property.

Response

Construction will occur in two stages as summarised in Section 4 of this submissions report. As planned, the construction will start with the Coxs River Road section. However, the construction program has been refined to deliver the proposal as two packages instead of four – the Coxs River Road section and the Coxs River Road to Lithgow section. This is expected to minimise the duration of construction for the proposal. Construction for the Coxs River Road section is proposed to commence late early 2023, with early works to begin mid-2022, subject to planning approval.

Transport is committed to further consultation with the community and other relevant stakeholders regarding any future changes in the proposal. A Community Communication Strategy (CCS) will be prepared for the proposal and will include procedures and mechanisms for regular distribution of information about the proposal and mechanisms to keep relevant stakeholders updated on construction activities, schedules and milestones and avenues as per Safeguard SE01 in Section 6.2 of this submissions report.

Submission number(s)

102, 103, 110, 113, 120

Issue description

Several respondents note that the construction phase for the proposal will inevitably extend in duration.

Response

An indicative construction program for the proposal is provided in Section 3.3.3 of the REF. Subject to planning approval, construction of the proposal is planned to commence in 2022.

As stated above and in Section 4.2.7 of this submissions report, the construction program has been refined to deliver the Coxs River Road to Lithgow section as one package to minimise the duration related to construction.

Submission number(s)

37, 62, 69, 73

Issue description

Four respondents are concerned about the disturbance of construction activities on Hartley Valley. Two respondents are particularly concerned about the environmental impacts of construction.

Response

Transport acknowledges the proposal would result in construction impacts within the construction footprint.

Measures to avoid, minimise or offset potential environmental impacts have been considered during the options assessment process and development of the concept design. Where there are impacts, safeguards and management measures have been developed to minimise, and where feasible, mitigate them (refer to Section 6.2 of this submissions report). A CEMP will be prepared and implemented to minimise impacts during construction as per Safeguard GEN01 in Section 6.2 of this submissions report. As a minimum, the CEMP will address any requirements associated with statutory approvals, issue-specific environmental management plans, roles and responsibilities and details of how the proposal will implement the identified safeguards identified in Section 6.2 of this submissions report.

Submission number(s)

123

Issue description

The respondent states that construction will have a major impact on individual sites, species of significance, and the overall Hartley Valley cultural and environmental landscape.

Response

Assessment of the potential construction impacts on heritage and biodiversity have been assessed in the REF and mitigation safeguards identified to avoid and minimize impacts. As noted above, a CEMP will be implemented to minimise environmental impacts related to the construction phase that would capture the safeguards identified. Impacts to biodiversity and Aboriginal and non-Aboriginal heritage sites have been assessed as follows, as well as in Sections 2.6,2.9, and 2.10 of this submissions report:

- Section 6.1 and Appendix D of the REF assess the proposal's impact on biodiversity, including impacts to threatened species and communities. To minimised impacts on threatened species, a Flora and Fauna Management Plan will be prepared in accordance with Transport's *Biodiversity Guidelines: Protecting and Managing Biodiversity on Projects* (RMS, 2011) and implemented as part of the CEMP as per Safeguard BI01 in Section 6.2 of this submissions report. This will include procedures for unexpected threatened species finds and fauna handling. Other environmental safeguards in place include but are not limited to the minimisation of habitat removal (Safeguard BI02), provision of fauna fencing in selected areas of wildlife connectivity to reduce the risk of vehicle strike and fauna mortality as well as guide fauna towards fauna crossing structures (Safeguard BI22) and provision for the demarcation, ecological restoration, rehabilitation and/or ongoing maintenance of retained native vegetation habitat within the construction footprint
- Section 6.4 and Appendix G of the REF assess the proposal's impacts on Aboriginal heritage, including impacts to Aboriginal sites and cultural values. Management recommendations have been developed in consultation with Registered Aboriginal Parties (RAPs) to avoid impacts where possible and where impacts are unavoidable, to effectively mitigate them. Management of Aboriginal sites would include protection and salvage measures (Safeguard AH09 and AH07), development of a curation policy for salvaged Aboriginal objects (Safeguard AH08) and procedures for unexpected discovery of Aboriginal objects (Safeguard AH10). As per environmental safeguard AH06 in Section 6.2 of this submissions report, temporary fencing will be placed on the boundary of listed Aboriginal heritage sites to mitigate construction impacts (refer to Table 6-62 of the REF)

- Section 6.5 and Appendix H of the REF assess the proposal's impacts on non-Aboriginal heritage. Transport acknowledges that construction activities associated with the proposal have the potential to impact on heritage items directly and indirectly within the construction footprint including demolition/destruction of items, vibration impacts, and works within the local and State heritage curtilages (refer to Tables 6-71 to 6-74 in the REF). Safeguards identified in Section 6.2 of this submissions report will be implemented to address these impacts based on the impact type and level. Safeguards will include but are not limited to archival recording (Safeguard NH13), archaeological test excavation (Safeguard NH15), landscaping and sympathetic plantings (Safeguard NH11), monitoring of ground disturbance works (Safeguard NH16) and engagement of subject matter experts (such as heritage structural engineer and an arborist) where appropriate.

2.3.2 Design

Submission number(s)

6, 7, 13, 18

Issue description

Four respondents approve the concept and design of the proposal.

Response

Transport acknowledges the respondents support of the proposal and design features.

Submission number(s)

16, 90, 109

Issue description

Two respondents note the existing highway allows for overtaking in steep section as required and suggests the proposed design is overengineered. In particular, one respondent believes the intersection upgrade at Cox's River Road is far to oversized when compared to the traffic demand in the area.

Response

The proposal has been designed to deliver improvements to the traffic network and road safety. In particular, the design provides an additional climbing lane on River Lett Hill to separate slower trucks and other vehicles and allow for safer overtaking, and separation of carriageways for local and through traffic. As described in Section 6.2 of the REF, the Great Western Highway in the proposal area is already at capacity during certain periods. The upgrade would relieve congestion and provide safer, more reliable journey times.

Once operational, the proposal would have long term positive impacts on access and connectivity for local and regional communities, business, and industry (see Section 2 of the REF) with separation of local and through traffic. Traffic modelling has indicated that the proposal will improve travel times along the Great Western Highway and is predicted to reduce the total crash rate by 57 per cent between Little Hartley and Lithgow (see Section 6.2 and Appendix E of the REF). A simplified design would not deliver the same improvements.

As identified in Safeguard CU03, further design refinements, including options to simplify intersections, will be considered further as part of the detailed design process to reduce potential impacts where feasible.

Submission number(s)

11, 13, 15, 16, 30, 36, 38, 75, 80, 106, 107, 159

Issue description

Several respondents believe the design of the proposal is dangerous.

Response

The proposal has been designed to provide efficient, free flowing traffic conditions with capacity to safely accommodate forecast traffic volumes (see Section 6.2 of the REF for further details on predicted traffic volumes). The proposal design incorporates all feasible and reasonable traffic safety measures including those related to geometry, pavement, lighting and signage consistent with current Australian Standards, road design guidelines and industry best practice. In doing so, the design of the proposal inherently minimises the likelihood of incidents and accidents.

The proposal would improve the design of the Great Western Highway through improved curves and gradients of the highway alignment, intersection upgrades with local roads, and provision of additional local access and service roads. The design provides for two lanes in each direction, with an additional climbing lane on River Lett Hill to separate slower trucks and other vehicles and allow for safer overtaking. While it is acknowledged that the proposal would result in changes to entry and exit points, overall it would improve network performance and provide more flexibility and options to road users. The separation of through traffic on the highway and local traffic on the service roads will also increase safety for local motorists. As described in Section 6.2 of the REF, the proposal has been modelled to reduce the potential number of crashes on the Great Western Highway between Little Hartley and Lithgow by up to 57 per cent.

Further improvements to the proposal design and opportunities to improve safety will be considered during detailed design.

Submission number(s)

13

Issue description

The respondent suggests that the small park between Mudgee Street and the highway should be restored and include planting, seating and shade.

Response

As per environmental safeguard LV01, a number of urban design and landscape strategies have been incorporated into the proposal to minimise impacts and improve the proposal for residents and motorists. This includes minimising the removal of existing vegetation and maximising revegetation and planting opportunities with appropriate species. Sheet 7 of 8 (DU-DRG-000107) of the Urban Design plans (provided in Appendix L of the REF) shows the initial proposed landscape design for the area. The plan includes several feature plantings with deciduous trees to complement the surrounding heritage buildings. These plans will be further refined during detailed design in accordance with Safeguards LV01 and LV02.

Submission number(s)

13

Issue description

The respondent requested that the type of fencing used around the water quality basin be simple and not visually intrusive.

Response

Urban design recommendations for water quality basins were included in Section 7.5 of Appendix L of the REF and include:

- Designing water quality basins to resemble farm dams as a means to integrate them with the existing landscape character
- Provide 'in-line' water quality basins (ie utilising existing drainage lines) wherever possible to minimise the introduction of large unnatural forms in the landscape
- Where possible, utilising fencing that compliments the existing landscape character.

Urban design and landscape concept detail can be accessed in Section 7 of the Technical working paper - Urban design, landscape character and visual impact assessment (Appendix L of the REF).

Submission number(s)

15

Issue description

The respondent believes the concept design has been well considered, however they note that specific details relating to their property have not yet been finalised.

Response

The final 100 per cent concept design review and property acquisition plans have been completed and all affected property owners have been contacted. Each property owner has been provided with direct contact details for their Personal Acquisition Manager, who they can contact at any time if they have any queries.

Submission number(s)

15

Issue description

The respondent notes South Bowenfels water supply is currently supplied via a temporary pipe under the existing highway. The respondent requests that the proposal includes a service culvert to provide a permanent water supply line that is not subject to the uncertainty of highway maintenance or damage.

Response

Separate Utilities Management Plans have been prepared for each section of work and are presented in Section 3.5 of the REF that would be refined during further design development, with the utilities

leading into South Bowenfels shown in Figure 3-4 of the REF. As identified in Section 3.5 of the REF, some major public utilities are located within the proposal construction footprint. The main utilities considerations include the realignment or adjustment of overhead powerlines, overhead and underground communications assets and water mains. Transport will consult with utilities providers to identify permanent and temporary utilities within the proposal area during detailed design.

For any utilities where potential for relocation is identified, further consultation with utility asset owners would be carried out to determine the most suitable course of action. All utilities diversions would be carried out in accordance with the requirements agreed with utilities providers, including any requirements for asset protection and access requirements.

Submission number(s)

23

Issue description

The respondent suggested an access road be provided at the base of Victoria Pass near the tunnel. The respondent suggests a new westbound carriageway should follow the alignment of the concept design.

Response

The existing Great Western Highway will be used as a Service Road where it is bypassed by the proposed new works. All property accesses will be retained along the existing Great Western Highway, refer to Section 3.2.3 for information on the service roads. A four-lane divided highway is proposed to ensure the design criteria and user safety meets the design standards identified in Section 3.2 of the REF.

Submission number(s)

23

Issue description

The respondent suggests the new westbound carriageway should pass to the south of the Lolly Bug.

Response

The proposed design retains the Lolly Bug access from the existing Great Western Highway which becomes Service Road 2. The new Great Western Highway carriageway will pass to the south of the Lolly Bug. It should be noted that if the Great Western Highway realignment was positioned further south, there will be impacts on heritage and rural residents. The proposal route will be the most suitable given these constraints. The proposed Coxs River Road design ensures major impacts to majority of the heritage listed property are avoided.

Submission number(s)

23

Issue description

The respondent highlighted the need to consider emergency incident management through proposal design.

Response

Transport has consulted with emergency services during the development of the REF and would continue to consult with emergency services prior to and during construction to confirm any diversions and any operational road network changes (refer to Safeguard TT05 in Section 6.2 of this submissions report).

As per Safeguard SE05, access for emergency vehicles will be maintained at all times during construction. Any site-specific requirements will be determined in consultation with the relevant emergency services agency (eg for South Bowenfels Rural Fire Brigade and Lithgow Hospital).

In the event of a fire, emergency services will be able to gain access via the existing Great Western Highway or tracks used for construction activities. Access and egress to/from private properties in bushfire prone areas adjoining the construction corridor will be maintained, with advice on any access changes provided to RFS in advance of the bushfire season (refer to Safeguard BF01 in Section 6.2 of this submissions report).

Submission number(s)

26, 35, 40, 53, 54, 55, 56, 57, 58, 59, 65, 66, 76, 79, 80, 86, 87, 89, 90, 91, 95, 96, 97, 100, 101, 102, 103, 105, 106, 107, 109, 112, 114, 116, 119, 120, 123, 125, 144, 145, 147, 152, 156, 180

Issue description

Several respondents expressed dislike for the proposal design. One respondent suggests that the proposal should be redesigned to avoid impacts. Two respondents believe that the size and scale of the proposal is unnecessary.

Response

Transport acknowledges the respondents' opposition to the proposal. The proposal will generally follow the alignment of the existing Great Western Highway. The new sections of highway will be built to current Australian Standards, road design guidelines and industry best practice while also incorporating parts of the existing Great Western Highway into the design to be used as service roads for local traffic. The separation of through traffic on the highway and local traffic on the service roads will allow for greater safety for motorists in the local community.

The proposal has been designed to provide efficient, free flowing traffic conditions with capacity to safely accommodate forecast traffic volumes. The proposal design incorporates all feasible and reasonable traffic safety measures including those related to geometry, pavement, lighting and signage consistent with current Australian Standards, road design guidelines and industry best practice. In doing so, the design of the proposal inherently minimises the likelihood of incidents and accidents.

Since the initial announcement of the proposed upgrade in 2008, the corridor, alignment and design of the proposal has been developed through a rigorous options assessment process that has taken into consideration feedback from the community as well as the potential social, environmental and

heritage impacts of each option. The proposal was the outcome of this options development process and is considered to best meet Transport objectives while minimising the potential impacts of the proposal.

Further refinement of the concept design will occur during the detailed design phase. This will include considerations for opportunities to reduce the construction footprint, the bulk of structures and the number of ancillary facilities required as per Safeguard LV02 in Section 6.2 of this submissions report.

Submission number(s)

31, 36, 79, 80, 91, 102, 113

Issue description

Several respondents note that the proposal will negatively impact connectivity for residents in Hartley and expresses particular concern for the safety of residents towing horse floats in the intersection of Baaners lane and the Great Western Highway.

Response

Transport acknowledges that some residents will be required to travel further distances to access their properties due to the direction separated lanes, however this disbenefit will be offset by the increase in safety resulting from the restricted turns against ongoing highway traffic. The proposal would also improve local access throughout the area and reduce the need to access the Great Western Highway for local travel through the creation of 10 new service roads as identified in Table 3-5 of the REF.

The proposal would provide a number of new bridges over the Great Western Highway ensuring connectivity between local residents on either side of the highway. New bridges would be provided at the existing Great Western Highway near Little Hartley, Coxs River Road, Baaners Lane, the existing Great Western Highway near Hartley and Jenolan Cave Road.

Submission number(s)

35, 37, 107

Issue description

Three respondents recount that they were not made aware in the original concept design meetings in 2009/2010 about particular design aspects of the proposal including the duplication, overhead and underpasses.

Response

The development of the concept design has been an iterative process from the initial corridor and route community meetings back in 2009 and 2010 to the exhibition of the REF based on feedback from the community as well technical investigations with an aim of minimising potential environmental, social and heritage impacts.

During the initial corridor and route community meetings in 2009 and 2010 the design was in a preliminary phase and the specific details relating to overpasses and underpasses were not yet fully understood. Consultation carried out for the Great Western Highway Upgrade Program and the proposal is presented in Section 5 of the REF, which included presentation of the upgrade program and community information sessions in 2019. Community information sessions were also held in

November and December 2021 to explain the design and the REF findings and encourage community feedback (refer to Section 1.2 of this submissions report). Consultation with the community will continue through detailed design and construction in accordance with Safeguard SE01 (refer to Section 6.2 in this submissions report).

Submission number(s)

45, 60

Issue description

Two respondents believe that the turning bay on Baaners Lane is not required.

Response

Baaners Lane is a 'No Through Road' connecting multiple rural allotments to the highway. A U-turn bay has been provided on the western side of the carriageway that presents a suitable area for school buses and other vehicles travelling along the main alignment to take advantage of the all-movements configuration of the Baaners Lane and Great Western Highway intersection.

Submission number(s)

74

Issue description

The respondent raises concerns for the Baaners Lane degradation.

Response

As described in Section 3 of the REF the upgrades to the intersection of Baaners Lane with the Great Western Highway would involve the construction of a sea-gull intersection with all movements permitted and provision of a vehicle turning facility on Baaners Lane. The works on Baaners Lane would be designed to meet the design life criteria set out in Table 3-2 of the REF and would be maintained by Transport.

Submission number(s)

64, 76, 137

Issue description

One respondent suggests the road design incorporates two lanes in each direction minimum, and minimal traffic lights. The respondent also suggests providing left-turn only off the highway and U-turn bays. Two respondents suggest the proposal should not be widened beyond four lanes.

Response

As described in Section 3 of the REF, the proposal involves upgrading the Great Western Highway between Little Hartley and Lithgow to a four-lane divided highway (two lanes in each direction). A third climbing lane would be provided between River Lett Hill and Forty Bends for heavy vehicles. There would be no signalised traffic lights and vehicles travelling along the new Great Western Highway would be restricted to left in movements, except where dedicated lanes are provided.

Traffic modelling indicates that the existing Great Western Highway will be expected to deteriorate and would approach operational capacity due to the increase in traffic growth. The realignment of the existing Highway to four lanes will support greater capacity on the Great Western Highway, allowing traffic to flow smoothly. The improved travel times, travel reliability and safety for motorists making trips using the Great Western Highway would contribute to improved access and connectivity to community services and facilities.

The posted speed limits of the proposal vary between 80 and 100 kilometres per hour and is considered suitable based on the proposed design. The speed limit would ensure efficient free flowing traffic while minimising potential safety risks due to the adoption of feasible and reasonable traffic safety measures including those related to geometry, pavement, lighting and signage consistent with current Australian Standards, road design guidelines and industry best practice.

Submission number(s)

22

Issue description

The respondent suggests the erection of street signs that recognise local members of the community. The respondent suggests the use of signs crafted in metal from the local Talisman Gallery to promote the area's history.

Response

A key sustainability principle of the proposal is to promote heritage and deliver community benefits with one specific target being to look for opportunities to incorporate local artists/art in community spaces and infrastructure spaces. Interpretive elements have been considered for design integration in the Hartley Valley, including public works of art, interpretive signage, bridges, earthworks and plantings to celebrate and acknowledge the Aboriginal history of the local area and today's Aboriginal community that connects with the area (Safeguard AH04). This would be considered further during detailed design.

Submission number(s)

74

Issue description

The respondent believes the proposal uses excessive land.

Response

The proposal has been designed to minimise the use of land as much as possible while still providing safety measures including those related to geometry, pavement, lighting and signage consistent with current Australian Standards, road design guidelines and industry best practice. Once operational, the proposal will support quicker, more reliable and safer regional connections and links to and from destinations within the construction footprint, surrounding Blue Mountains, Lithgow and Central West and Orana regions, and greater Sydney.

Submission number(s)

22

Issue description

The respondent suggests strategically placed lighting to avoid unnecessary light pollution.

Response

Lighting is not required on the main carriageway but would be provided at intersections and connecting roads for safety reasons as required. The design of temporary and permanent lighting will be carried out in accordance with AS 1158.1.1:2005 and will avoid unnecessary light spill on adjacent residents or sensitive receivers, as described in Safeguard LV04.

Submission number(s)

22

Issue description

The respondent suggests the provision of fenced pet grounds at the rest stops. The respondent believes this measure will limit pet mess and prevent animals entering roadways.

Response

Opportunities to provide additional amenities such as pet relief areas would be considered further during detailed design.

Submission number(s)

22

Issue description

The respondent suggests the installation of emergency notifications to alert of major accidents and inclement weather.

Response

As described in Section 3.2.3 of the REF, Intelligent Transport Systems infrastructure would be installed along the length of the proposal to display emergency messages. The location of this infrastructure would be confirmed during detailed design.

Submission number(s)

49

Issue description

The respondent queried whether the upgraded Great Western Highway would be a toll road.

Response

The proposal would not be a toll road.

Submission number(s)

76

Issue description

The respondent believes Lithgow Council will be unable to maintain the infrastructure.

Response

Maintenance of the Great Western Highway would be managed by Transport. Transport is in consultation with Lithgow City Council to reach an agreement on the maintenance of other infrastructure.

Submission number(s)

76

Issue description

The respondent raises concerns about frost accumulation.

Response

Frost accumulation has been considered throughout the design process. Transport has incorporated safety principles to ensure the upgraded highway meets road safety standards and that the risks to all road users including pedestrians and cyclists are minimised, including the use of variable speed limit signs to be considered during detailed design for periods of low visibility.

Submission number(s)

91

Issue description

The respondent suggests the proposal makes no provision for cycling networks.

Response

As described in Section 2.2.3 of the REF, the proposal would improve conditions for pedestrians and cyclists by providing a range of improvements to the existing active transport network and facilities by providing:

- A 2.5 metre nearside sealed shoulder on the Great Western Highway for on road cyclists
- A two metre nearside sealed shoulder on Service Road 2 and Coxs River Road for on road cyclists
- A two metre nearside sealed shoulder on Service Roads 1 and 3 for on road cyclists.

Design development has considered the future development of shared paths in the vicinity of the proposal. The alignment and structure of the future shared paths would be developed and finalised during future design development and in consultation with Lithgow City Council and other relevant stakeholders. An indicative route is provided in Appendix R of the REF.

Submission number(s)

103

Issue description

The respondent opposes the highway bisecting the residential areas of the Valley and the addition of roadways and bridges.

Response

As described in Section 3.2.3 of the REF, the proposed alignment would follow the general alignment and grade of the existing highway, however it would diverge in places to ease tightly curved sections. As described in Section 6.10.3 of the REF, during operation the proposal would support safer and more reliable access to properties and destinations through improved road conditions and the separation of local traffic and through traffic for much of the Little Hartley to River Lett stage of the proposal. The proposal would also lead to a reduction in regional and freight traffic passing through the main area of Little Hartley Village, leading to improved amenity through a reduction in noise, improved air quality and safety conditions for vehicles, pedestrians and cyclists within the town. The provision of bridges and service roads would facilitate these movements.

Submission number(s)

107, 109, 119, 142

Issue description

Two respondents state the grade down River Lett hill is greater than the design guide. One respondent suggests that the gradient at River Lett Hill needs improvement.

Response

The maximum grade on the existing section of River Lett Hill is 11 per cent. While the design aims to maintain the proposed maximum grades below six per cent, a grade of 6.75 per cent on River Lett Hill was selected to minimise excessive cutting and viaduct heights.

Submission number(s)

131, 132

Issue description

Two respondents suggest that the proposal is not an upgrade and labelling it as such is misleading to the public.

Response

The proposal is considered an upgrade of the Great Western Highway between Little Hartley and Lithgow in that it will replace the existing Great Western Highway. As noted above, the proposal will generally follow the alignment of the existing Great Western Highway. The new sections of highway would be built to current Australian Standards, road design guidelines and industry best practice while also incorporating parts of the existing Great Western Highway into the design to be used as service roads for local traffic.

Submission number(s)

133

Issue description

The respondent suggests the concept design is nearly 10 years old and does not reflect the current needs of the local or greater Central West communities.

Response

The concept design, which is based on the preferred option from the options development process (see Section 2 of the REF), has been developed over the past two years. The design has considered current data including traffic counts, crash statistics (see Section 6.1 of the REF) and feedback received during ongoing consultation throughout the concept design development (see Section 5 of the REF).

Submission number(s)

145

Issue description

The respondent expressed concern that residents will experience extra travel time to access the Great Western Highway.

Response

It is acknowledged that in some cases local residents will be required to travel an increased distance to access Great Western Highway. The proposal has been designed this way to improve local connections via the service roads while limiting the need for locals to turn into high-speed traffic travelling along the new Great Western Highway. The addition of service roads will also improve safety through the separation of through traffic and local traffic, with through traffic utilising the Great Western Highway and local traffic utilising the service roads.

Submission number(s)

156

Issue description

The respondent objects to the proposed over and underpasses and instead suggests turning and merging lanes.

Response

This design was chosen after a robust options assessment and in consultation of the community (refer to Section 2 and 5 of the REF respectively). To minimise the visual impacts of overpasses and underpasses, safeguards and management measures have been developed as summarised in Section 6.2 of this submissions report. This includes having a simple and streamlined design for the proposed bridges to allow the surrounding landscape character to predominate (refer to 7.2 in Appendix L of the REF). Further considerations of the twin bridges to be made during detailed design include the provision of stone pitching to the spill through abutments (Safeguard LV02) (refer to 7.2.3 in Appendix L of the REF). The detailed design will also consider opportunities to reduce the construction footprint,

explore the maximisation of vegetation and planting opportunities along the upgraded highway, and ensure residual land is developed to complement the existing landform (Safeguard LV02). The grade separated intersection design was favoured for its reliability and safety features, as opposed to turning and merging lanes.

Submission number(s)

159

Issue description

The respondent opposes the ceasing of dual lanes on or near sharp bends in the road.

Response

The proposal would provide two lanes of traffic in both directions with an additional climbing lane for trucks travelling up River Lett Hill. It is not proposed to cease dual lanes on or near sharp bends.

Submission number(s)

145

Issue description

The respondent requests the new highway and Jenolan Caves Road exit lane be positioned further away from the River Lett.

Response

As outlined in Section 2 of the REF, the robust options assessment conducted for the proposal has considered many constraints, including potential impacts to Aboriginal heritage. The options assessment was conducted in consultation with the community and the current route, which will cross the River Lett, has been identified as the most appropriate option.

Safeguards and management measures identified in Section 6.2 of this submissions report include measures that would be implemented to minimise and/or mitigation impacts to River Lett. This includes investigating the feasibility of retaining portions of Aboriginal sites that are located under elevated structures bridges) over River Lett and on River Lett Hill during detailed design (Safeguard AH03). For specific sites listed, refer to Safeguard AH03 in Section 6.2 of this submissions report. To minimise impacts to Aboriginal sites in the construction footprint, construction works will be closely confined to the minimum possible area required for construction activities (Safeguard AH05). Temporary fencing will also be placed on the boundary of listed Aboriginal heritage sites (see Section 6.2 for further detail) as per Safeguard AH06. Further design refinements would be considered further as part of the detailed design process to reduce potential impacts where feasible.

Submission number(s)

12

Issue description

The respondent questioned the source of the materials to be used on the proposal.

Response

Sources of materials are identified in Section 3.3.6 of the REF. Where possible materials would be sourced as much as possible from the surrounding area, with providers selected by the contractor. There are numerous quarries in Little Hartley and Lithgow which can provide earthwork materials. Asphalt pavement materials would be sourced from existing batch plants operating within the Lithgow City LGA and beyond. Reinforced steel would be sourced from suppliers throughout Australia. Concrete for the bridge, pavement sub-bases and other proposal elements would be sourced from local batch plant facilities selected by the construction contractor.

Submission number(s)

144

Issue description

The respondent suggests consideration should be given to a simpler design which reduces impacts on the cultural landscape. The respondent believes money could be saved by simplifying the design and retaining the existing 80 kilometres per hour speed limit.

Response

As discussed in Section 2 of the REF, the options assessment has considered the construction footprint, with the proposal being identified as having the least overall impacts. Transport acknowledges there are inevitable impacts associated with the proposal. To minimise and/or mitigate these impacts, safeguards and management measures have been developed for the proposal as outlined in Section 6.2 of this submissions report.

Transport acknowledges and has considered the heritage significance of Hartley Valley in Sections 6.4, 6.9 and Appendices H and L of the REF. While there will be landscape character and visual impacts on the Valley, these will be minimised, and where feasible, mitigated through the safeguards and management measures outlined in Section 6.2 of this submissions report. An Urban Design Plan will present an integrated urban design for the proposal and will include design treatments for built elements (Safeguard LV01). This includes the proposed bridges, which will be simple and streamlined to allow the surrounding landscape character to predominate (see Section 7.2 of Appendix L of the REF). Also considered are the use of fill embankments, which will be minimised particularly in areas with native vegetation on steep slopes. Where feasible, vegetation would be provided to screen the highway. The investigation of opportunities to reduce the bulk of structures will be further considered during detailed design (Safeguard LV02).

The speed limits are set based on safe operation for motorists and is considered suitable based on the proposed design. The posted speed of the proposal at South Bowenfels will remain unchanged at 80 kilometres per hour. The remainder of the highway between Forty Bends and the bottom of Victoria Pass will be posted between 90 to 100 kilometres per hour. The speed limits would ensure efficient free flowing traffic while minimising potential safety risks due to the adoption of feasible and reasonable traffic safety measures including those related to geometry, pavement, lighting and signage consistent with current Australian Standards, road design guidelines and industry best practice.

A primary objective for the proposal is increasing road safety for all users of the Great Western Highway. The design has considered this objective through the separation of the highway and service roads to separate local traffic and through traffic, provision of acceleration and deceleration lanes and reduction in direct access from local roads onto the highway. The provision of 2.5 and two metre

sealed shoulders on sections of the Great Western Highway (refer to Section 2.2.3 of the REF) would also improve safety conditions for pedestrians and cyclists.

2.3.3 Intersections

Submission number(s)

11, 12, 23, 45, 53, 54, 64, 86, 87, 90, 103, 131, 132

Issue description

Several respondents raised concerns about the Coxs River Road and Baaners Lane intersections, including the following suggestions:

- A roundabout at the Coxs River Road intersection
- The road between Coxs River Road and Baaners Lane should be lowered and Baaners Lane given access to the existing Great Western Highway and Browns Gap Road by an overpass
- Several respondents expressed concern over the Baaners Lane intersection and suggests a Browns Gap Road/Baaners Lane interchange similar to that proposed at Coxs River Road would be more suitable
- Respondents raised concerns about the safety of the proposed Baaners Lane intersection
- An at-grade intersection connected to the new westbound carriageway and connecting via an access road to the eastbound (existing) carriageway for traffic wanted to travel east. The respondent suggests the Coxs River Road alignment would be moved to align with the Ambermere Drive intersection.

Response

Roundabouts are not a preferred design option as they create additional conflicting traffic movements and compress traffic to one location. A grade separated intersection is presented in the proposed design as it is inherently safer than at grade intersections due to a number of factors such as reduced conflicting traffic movement as all movements are free flowing, (reducing the risk of T-bone or head on type crashes common to at grade intersections). Additionally, vehicles are travelling at comparable speeds (no speed differential, which can lead to rear end or side swipe type crashes). The provision of service roads also provides additional options for local traffic to access the Great Western Highway safely. Connectivity between Baaners Lane and Browns Gap Road and the location of the Baaners Lane and Great Western Highway intersection was raised as a key concern in the community feedback received by Transport in previous phases of the proposal. As such, a review was carried out at a workshop held in March 2021 between Transport and its consultants to investigate alternative options around this connection. The options reviewed at the value management workshop were:

- Option 1: Right Turns in and out of Baaners Lane across the Great Western Highway (at grade intersection). Residents along Baaners Lane travelling to Browns Gap Road will need to travel via Great Western Highway
- Option 2: Bridge across the Great Western Highway and staggered T-intersection with grade separation
- Option 3: New service road along Great Western Highway for connection to Coxs River Road (at grade intersection).

A paired comparison and option assessment was carried out during the workshop which resulted in both Option 1 and Option 2 having merit, and that further consultation with the community would be

required. Transport met with the Hartley District Progress Association in March 2021. Based on feedback from this meeting, it was determined that Option 1 would be developed in the concept design and is the option presented in the REF. The Traffic and transport assessment (Appendix E of the REF) assessed that the proposal would lead to a reduction in crashes on the Great Western Highway of 57 per cent, which includes a 50 per cent reduction in crashes from intersections from adjacent approaches.

As identified in Safeguard CU03 in Section 6.2 of this submissions report, further design refinements, including options to simplify intersections and the use of variable speed limit signs for periods of low visibility, would be considered further as part of the detailed design process to reduce potential impacts where feasible.

Submission number(s)

36, 56, 102, 103, 107, 120

Issue description

One respondent believes the scale of construction is greater than necessary at Coxs Road and Jenolan Caves Road intersections. Two respondents suggest that the proposed design for Coxs River Road could be simplified. One respondent suggests that the turn off to Jenolan Caves Road could be improved.

Response

The Coxs River Road intersection has been designed to allow for the intersection to be constructed predominantly offline and traffic flow along the highway to be maintained. The proposed divergence from the existing highway would also avoid impacts to three heritage listed/potential buildings, the Lolly Bug, the Harp of Erin and Ambermere.

The Jenolan Caves Road intersection also diverges from the existing highway to allow the existing highway to be used as a service road to access Jenolan Caves Road, Old Bathurst Road and Blackmans Creek Road. The twin bridges are located where the proposed new highway passes over Boxes Creek, Blackmans Creek Road and Jenolan Caves Road.

The proposed design for the intersections supports free flowing traffic, allowing for reduced congestion and greater travel reliability. Safety for motorists and other users of the Great Western Highway will also be improved as the design reduces the need for motorists to cross in front of oncoming traffic. Further refinement in the proposal design and construction program will be considered during detailed design. Opportunities will be investigated to reduce the bulk of structures and the construction footprint in accordance with Safeguard LV02 (refer to Section 6.2).

Submission number(s)

90, 95, 96, 142

Issue description

Four respondents believe that access to Hartley Historic Village from Jenolan Caves Road is inadequate, and that the proposal does not improve connectivity between the highway and Blackmans Creek and Jenolan Caves Road.

Response

Direct access between Jenolan Caves Road and Blackmans Creek Road is provided via an underpass beneath Great Western Highway without the need to access Great Western Highway. Similarly access to Hartley Historic Village from Jenolan Caves Road or Blackmans Creek Road would be possible via a service road. The access provided to Hartley Historic Village from Jenolan Caves Road would be possible via a service road which would avoid needing to access the new Great Western Highway.

Submission number(s)

12

Issue description

The respondent requests entry and exit lanes at Jenolan Caves Road are of sufficient length and width.

Response

The westbound On Ramp 2 exiting Jenolan Caves Road is designed in accordance with relevant guidelines and provides sufficient length to allow for safe merge onto the Great Western Highway. When travelling eastbound along the Great Western Highway, Jenolan Caves Road would be accessed by exiting at Off Ramp 2, and travelling along Service Road 6 under the proposed twin bridges and linking into the existing Jenolan Caves Road.

2.3.4 Rest areas

Submission number(s)

23, 26, 28, 31, 35, 36, 37, 38, 53, 54, 55, 56, 69, 79, 80, 83, 86, 87, 89, 90, 91, 95, 96, 102, 103, 106, 107, 108, 114, 117, 119, 120, 124, 131, 132, 133, 134, 138, 147, 153, 154, 156, 158

Issue description

Several respondents opposed the inclusion of vehicle rest areas, citing visual, noise, air quality, amenity, lighting and socio-economic impacts.

Response

Transport's first priority for our road projects is the safety of all road users. It is vital to make sure that drivers of heavy vehicles have appropriate opportunities to rest so that they can avoid driver fatigue.

Transport understand stakeholders would prefer not to see rest areas in the Hartley Valley, however they are a crucial road safety measure, and must remain in the upgrade design.

Transport considered several potential sites for the rest areas. These sites in the Hartley Valley were chosen due to their distance from other heavy vehicle rest areas, the availability of suitable land and the lack of locations in the built-up area of the Blue Mountains.

While the rest areas cannot be moved for the reasons above, Transport appreciate the community's concerns and are continuing to investigating improvements to the design to reduce the visual and noise impacts. Transport have also added facilities for light and recreational vehicles so the rest areas can benefit all road users.

The assessments prepared for the REF found that the impacts from the rest areas would be minimal and the safeguards identified in the REF and included in Section 6.2 of this submissions report would further mitigate residual impacts. Potential impacts were assessed as follows:

- Noise (Section 6.3.3 of the REF): the proposed truck rest areas may introduce additional impacts and maximum noise levels from events such as truck airbrake releases. Noise levels and maximum events are, however, expected to generally be louder from the realigned Great Western Highway. Additional noise mitigation would be provided for receivers who were determined to be impacted above the Transport Noise Mitigation Guideline criteria, in accordance with Safeguard NV13.
- Air quality (Section 6.13.3 of the REF): the air quality assessment, which included assessment of construction and operation of the rest areas indicates that the section of the proposal between Little Hartley and River Lett would not result in any adverse local operational air quality impacts.
- Visual impacts (Section 6.9.3): to mitigate potential visual impacts the landscape design of the rest areas would ensure that they are fully integrated into the existing landscape whilst still providing filtered views from the new highway to acknowledge their presence. The new design has been set lower into the landscape and the urban design will be further developed to include:
    - Picnic shelters located within a lawn area with scattered native tree planting to provide a park-like atmosphere
    - Concrete paths linking the light vehicle and truck parking areas with the picnic shelters and toilet block, providing safe circulation access around the rest area
    - Tree planting to the carpark islands, where space permits, to provide shade for vehicles
    - The opportunity to provide landscape marker planting to denote the entry to the rest area.
- The design of temporary and permanent lighting will be carried out in accordance with AS 1158.1.1:2005 and will avoid unnecessary light spill on adjacent residents or sensitive receivers.

Submission number(s)

23, 31, 53, 54, 55, 79, 86, 87, 90, 91, 95, 96, 103, 114, 120, 124, 138

Issue description

Several respondents suggested the topography of the proposed rest area location is not suitable for heavy vehicles, citing the 300 metre eastbound or 200 metre westbound climb required on either side of the proposed location. The respondent noted it is not in the interests of heavy vehicle operators to climb steep ascents on a cold engine in temperatures that can reach below -5 degrees Celsius. One respondent questioned whether consultation with the transport industry, particularly truck operators, have been conducted for this proposal. The respondent is concerned that truck drivers will object to the rest areas as they are located in areas with low temperatures.

Response

The highway has been designed to reduce gradients to prevent heavy vehicle noise. The rest areas are located adjacent relatively flat highway grades.

The eastbound rest area is located near a crest and vehicles will be climbing a 1.75 per cent (flat) grade travelling east as they exit the highway to enter the rest area. When exiting the eastbound rest area vehicles will climb the 1.75 per cent (flat grade) for 200 metres until the crest as they merge with the main highway alignment then continue on a down grade of 1.9 per cent eastward.

The westbound rest area is located on a 3.34 per cent down grade and vehicles will be descending this downgrade travelling west as they exit the highway to enter the rest area. When exiting the westbound rest area vehicles will descend the 3.34 per cent as they merge with the main highway alignment then continue on the 3.34 per cent down grade westward.

Transport has commenced initial consultation with the heavy vehicle transport and freight industry regarding the Great Western Highway Upgrade Program. Formal consultation with stakeholders will be included in the CCS (Safeguard SE01), which will seek stakeholder feedback identify and manage risks, foster support, inform stakeholders and provide transparent and helpful information to stakeholders on how their feedback is being used to shape the Great Western Highway Upgrade Program.

Submission number(s)

47

Issue description

The respondent suggests that the proposed truck rest areas will increase littering.

Response

The proposed rest areas are still undergoing detailed design and will be furnished with waste management infrastructure and undergo maintenance by Transport. Rubbish bins would be provided at both rest areas providing motorists with an opportunity to legally dispose of rubbish from their vehicles. Motorists would be encouraged to place litter in the bins. Regular cleaning of the rest areas will be carried out, with opportunities for road users to report unsatisfactory conditions via a phone line. If littering is observed, it is encouraged to report this to the NSW EPA via the EPA website.

Submission number(s)

22

Issue description

The respondent suggests the installation of firefighting equipment and infrastructure as well as water supply at rest stops and along the roadway to assist firefighting efforts. The respondent suggests this measure could be collaborated on with farmers to use dam water.

Response

The Technical working paper – Bushfire is summarised in Section 6.14 included as Appendix P of the REF and outlines a number of recommendations for operational management to reduce bushfire risk, including vegetation management and warning signage (Safeguards BF05 to BF08). These measures would be incorporated into the operational management of the highway and the use of Intelligent Transport Systems infrastructure. During construction access to existing water supplies would be maintained for emergency vehicles. Once operational, access to the water quality basins would be provided as part of detailed design to emergency services.

The proposal design has sought to improve access for emergency vehicles and maintain access to the greatest extent practicable. Provision of access to water sources for firefighting purposes is not in scope for the proposal, however Transport will continue to consult with the Rural Fire Service throughout detailed design to confirm their needs.

Submission number(s)

102, 109, 142

Issue description

Several respondents are concerned that the rest areas will become default trailer pick up and drop off bays as B-doubles travel from the west. Respondents note that this is not an appropriate use of Hartley Valley.

Response

The purpose of the proposed rest areas is to provide the opportunity for all road users to take rest breaks to help them manage their fatigue. The rest areas would not be permitted for use as a storage location for trailers as this would reduce the heavy vehicle parking space available for heavy vehicle drivers who have a legal obligation to rest.

2.3.5 Stormwater management

Submission number(s)

22

Issue description

The respondent suggests modifications to battering and stormwater management devices during the construction phase to ensure best possible outcomes are achieved.

Response

The proposed construction methodology is indicative only and would be confirmed during detailed construction planning once a construction contractor has been engaged. A Construction Soil and Water Management Plan (CSWMP) will be developed for the construction phase that will contain Erosion and Sediment Control Plans that will specify the measures to be implemented to prevent erosion and sedimentation during construction, In accordance with Safeguards SW01 and SW02. The contractor would be required to comply with the environmental safeguards identified in Section 6.2 of this submissions report when developing and implementing construction methodologies to ensure the best possible environmental outcomes are achieved.

Submission number(s)

76

Issue description

The respondent raises concerns about road surface drainage.

Response

A description of the proposal is included in Section 3.1 of the REF and Table 3-7 includes a description of the cross and longitudinal drainage that would be installed or upgraded for the proposal. Cross drainage would include upgrades to existing pipes and culverts where feasible, as well as new drainage infrastructure for new sections of road, provision of scour protection and pit and pipe drainage where gutters are proposed.

As described in Section 3.2.3 and Appendix K of the REF, the hydrology and hydraulic assessment concluded that the proposal is compliant to the assessment criteria of flood immunity, flood impacts, and climate change risk and would not result in flooding impacts greater than the industry-accepted range for the land use types surrounding the proposal. In particular, it was concluded that the potential impacts of the proposal on the River Lett would be minor and confined to the riverbanks, even under the adopted climate change scenario (see Appendix K, Section 6.1).

Submission number (s)

13, 15

Issue description

One respondent suggests that the under-highway culvert will need to be upgraded as water will be directed towards their properties due to the slope of the land, and one respondent particularly requested drainage is directed away from their property.

Response

The proposal design would ensure that water is drained away from residential properties and towards water quality basins, open channels or existing waterways depending on the quality of the runoff.

A description of the proposal is included in Section 3.1 of the REF and includes a description of the cross and longitudinal drainage that would be installed or upgraded for the proposal. As noted in response above, cross drainage would include upgrades to existing pipes and culverts where feasible, as well as new drainage infrastructure for new sections of road, provision of scour protection and pit and pipe drainage where gutters are proposed.

2.3.6 Road closures for weather events

Submission number(s)

64

Issue description

The respondent believes the road should not be closed for weather events.

Response

As set out in Table 3-1 of the REF, the proposal has been designed with flood immunity for a one in 100 year annual recurrence interval flood and would operate for all events up to and including this storm event. The closure of roads is determined by emergency services. The decision to close the road would be determined based on the severity of the weather event and the risk to road user's safety should the road remain open.

2.4 Statutory and planning framework

2.4.1 Planning pathway

Submission number(s)

23, 53, 107, 109, 116, 129

Issue description

Five respondents suggested that an EIS should be prepared for the proposal. One respondent that stated the preparation of an EIS would remove the potential for prejudice in the assessment process. One respondent questioned the legality of the proposal.

Response

Transport has carried out a REF under the Division 5.1 of the EP&A Act and examined and taken into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity.

The statutory planning pathway for the proposal was established in accordance with the EP&A Act and the *State Environmental Planning Policy (Infrastructure) 2007* (ISEPP). Clause 94 of ISEPP permits development on any land for the purpose of a road or road infrastructure facilities to be carried out by or on behalf of a public authority without consent. As the proposal is for a road upgrade and duplication and is to be carried out by Transport, it can be assessed under Division 5.1 of the EP&A Act.

Additionally, the project was not likely to have an impact on matters of national environmental significance or the environment of Commonwealth land within the meaning of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). A referral to the Australian Government Department of Agriculture, Water and Environment was not required.

The proposal is only one part of the overall Great Western Highway Upgrade Program of works. Further upgrades have been proposed based upon available funding, project location, construction type and staging. Further upgrades including the Katoomba to Blackheath (East), Blackheath to Little Hartley (Central) and Medlow Bath projects will also be subject to assessment in accordance with the EP&A Act, with the appropriate statutory planning pathway selected as per each project's potential significance of impacts.

As summarised in Section 8.3 of the REF, Transport has examined and taken into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the proposed activity. The assessments concluded that, with the development and implementation of the safeguards identified in this submissions report, proposal would be unlikely to cause a significant impact on the environment, and it is therefore not necessary for an EIS to be prepared and approval to be sought from the Minister for Planning and Public Spaces under Division 5.2 of the EP&A Act.

Submission number(s)

23, 129, 131, 132

Issue description

One respondent noted that there are two separate approval pathways under the EP&A Act to determine the Great Western Highway Upgrade:

- A State Significant Infrastructure (SSI) EIS for the tunnel under Blackheath and Mt Victoria (Great Western Highway Upgrade - Central Section) to be assessed by the Department of Planning and Environment
- An REF for the proposal (Great Western Highway Upgrade - West Section) to be assessed by Transport.

Four respondents suggested a single EIS should be carried out for the entire Great Western Highway Upgrade Program, three of whom stated that the EIS should address air pollution from the tunnel emissions (Great Western Highway Central Section).

One respondent noted a previous project from the late 1990s that was a smaller scale to the proposal was subject to an EIS and queried why an EIS was not prepared for the proposal.

Response

As noted in Section 2.3.3 of this submissions report, there are four proposed sections of the Great Western Highway Upgrade Program between Katoomba and Lithgow, comprising the Medlow Bath Upgrade, East Section, Central Section and the West Section (the proposal). It was decided to deliver the final 34 kilometre section of the Great Western Highway upgrade in stages to allow the timely delivery of the upgrades by allowing the less complex sections of the upgrade program, such as the East Section and the West Section, to undergo assessment and approval prior to the finalisation of the concept design for the more complex Central Section. It also allows the assessments to consider localised impacts on individual communities more thoroughly.

Each stage is subject to separate environmental assessment and approval in accordance with the EP&A Act. As discussed in Section 6.17.2 of the REF, the four proposals would occur both concurrently in timeframe and consecutively geographically, therefore the cumulative impacts have been considered in the REF and will be considered in environmental assessments for future stages.

Air pollution related to emissions plumes from the tunnel will be considered in the Great Western Highway Upgrade Program (Central Section) environmental assessment.

It is noted that the ISEPP, which determines the planning approval pathway for the proposal, came into force in 2007 and would not have been in place during the previous assessment noted by the respondent.

2.4.2 LEP zoning

Submission number(s)

23

Issue description

The respondent noted their objection to locating rest areas adjacent to residentially zoned areas and stated that the rest areas are inconsistent with Lithgow City Council's Land Use Planning Strategy. The respondent cited the land zoning in the Lithgow City Local Environmental Plan 1994 at the proposed eastbound rest area is R5 Rural Residential. Rural subdivision allotments under the pre-1994 local environment plan were also referenced.

Response

Lithgow' City Council's draft *Land Use Planning Strategy 2010-2030* was prepared to inform updates to the *Lithgow City Local Environment Plan 1994*. The *Lithgow City Local Environment Plan 1994* was superseded by the Lithgow LEP, which is the current land use zoning plan for the land on which the proposal is located. As described in Section 4.1.2 and shown in Figure 4-1 of the REF, under the Lithgow LEP the land on which both the eastbound and westbound rest areas site is zoned as SP2 Infrastructure. Table 4-1 of the REF demonstrates how the proposal is generally consistent with the land zone objectives as set out in the Lithgow LEP for relevant zone types.

The rest areas have been designed to be sympathetic to the surrounding environment whilst still serving the purpose of providing amenities and an area for rest and refreshment. The positioning of the rest areas gives an opportunity to celebrate the unique industrial and natural heritage with the installation of information boards.

2.4.3 Adequacy of the REF

Submission number(s)

23, 56, 119

Issue description

Two respondents are concerned the REF has not adequately addressed environmental and social impacts, and one respondent is concerned that the Terms of Reference for the REF has not followed the due process.

Response

The REF has been prepared in accordance with the requirements of clause 228 of the Environmental Planning and Assessment Regulation 2000, which sets out the factors that must be taken into account when considering the impact of a proposal on the environment. Consideration has also been given to the assessment requirements of the *Biodiversity Conservation Act 2016* (BC Act), the *Fisheries Management Act 1994* (FM Act), the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and relevant best practice environmental assessment guidelines. The socio-economic impact assessment, which considers the social impacts of the proposal and is included in Appendix M of the REF, has been prepared in accordance with the *Environmental Impact Assessment Practice Note*

– *Socio-economic Assessment (Socio-economic Assessment Practice Note)* (Transport for NSW, 2020). In doing so, the REF helps to fulfil the requirements of:

- Section 5.5 of the EP&A Act including that Transport examine and take into account to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the activity
- The strategic assessment approval granted by the Federal Government under the EPBC Act in September 2015, with respect to the impacts of Transport's road activities on nationally listed threatened species, ecological communities, and migratory species.

Section 8 of the REF provides a summary of the findings of the REF and an assessment of the proposal against the requirements of the Environmental Planning and Assessment Regulation 2000. Further detail of the assessment of the proposal against the requirements of clause 228(2) of the Environmental Planning and Assessment Regulations and the potential impacts on Matters of National Environmental Significance under the EPBC Act are provided in Appendix A of the REF.

Submission number(s)

23, 58, 90, 95, 96, 129

Issue description

Five respondents suggested that the REF lacked detailed assessments, particularly regarding future potential changes to the proposal. There is specific concern that the REF has not adequately addressed heritage, community, visual impacts. One respondent noted that the REF has left many issues unanswered and fails to address its own brief.

Response

Section 6 of the REF provides a detailed description of the potential environmental impacts associated with the construction and operation of the proposal. Technical working papers providing the full details of the assessments carried out to inform the REF are included in Appendices C to Q of the REF. The REF has examined and taken into account to the fullest extent possible all matters affecting, or likely to affect, the environment by reason of the proposed activity, including:

- Biodiversity
- Traffic and transport
- Noise and vibration
- Aboriginal heritage
- Non-Aboriginal heritage
- Soils and surface water
- Groundwater
- Hydrology and flooding
- Landscape character and visual impacts
- Socio-economic
- Property and land use
- Contamination
- Air quality
- Bushfire
- Waste

- Sustainability, greenhouse gas and climate change
- Cumulative impacts.

Should Transport propose a modification to the proposal following determination, a consistency review would be prepared to help identify whether further environmental assessment is required and, if needed, an addendum REF would be prepared to address any additional environmental impacts and add or modify the safeguards and management measures accordingly to mitigate potential impacts.

Submission number(s)

23, 145

Issue description

Two respondents raised multiple issues regarding the presentation of information in the REF and the safeguards proposed:

- The proposed positive impacts of the proposal are overstated, while the negative impacts have been understated
- The proposal will have considerable short and long-term negative impacts
- The respondent believes that there is a lack of detail regarding mitigation methodologies
- There is an over reliance on the construction contractor, whom is not yet appointed, to carry out the required mitigation and ensure impacts are managed, and notes that it is not guaranteed that the mitigation measures will be carried out by the contractor
- The decision not to assess the impacts of the proposal with those of the tunnel construction works (Central Section) understates the real impact on the Hartley Valley.

Response

Section 6 of the REF provides a detailed description of the potential environmental impacts associated with the construction and operation of the proposal. All aspects of the environment potentially impacted upon by the proposal are considered along with the short-term (usually construction related) and long-term (usually operation related) impacts of the proposal. The assessments carried out have been prepared in accordance with statutory requirements, industry standards and guidelines applicable to each discipline. Further detail on the assessment methodology followed and is provided in each technical working paper, which are included in appendices C to Q of the REF. Where appropriate, the technical assessments have adopted a conservative approach and assessed 'worst-case' scenarios to ensure that predicted impacts are not underestimated and the safeguards in Section 6.2 of this submissions report have been identified to mitigate predicted and 'worst-case' environmental impacts. In addition, Safeguards such as BI07, AH10 and NH01 include processes for the management of will allow for early identification and rectification of any unforeseen environmental impacts, such as unexpected heritage finds and the unexpected occurrence of threatened species on site.

Where appropriate, the safeguards identified reference applicable guidelines that will be used to inform the development of the management plans and mitigation measures. These guidelines are publicly available on the internet and provide further detail on the methodologies to mitigate impacts that would be implemented for the proposal.

Should the proposal be approved, Transport and the appointed contractor will be required to comply with all the safeguards set out in Section 6.2 of this submissions report and other feasible and reasonable measures to prevent and/or minimise any harm to the environment that may result from the construction or operation of the proposal. The contractor will be responsible for implementing the

safeguards that are identified as the contractor's responsibility, and Transport will monitor the contractor's compliance with the safeguards during construction.

Section 6.2 of this submissions report outlines specific safeguards and mitigation measures for each of the potential environmental impacts associated with the proposal.

As noted above, the proposed tunnel forms part of the Central Section which will be subject to a separate planning approval and is outside the scope of the proposal and would be assessed in a separate environmental impact assessment that would consider the cumulative impacts of operation of the tunnel with the proposal.

2.5 Consultation

2.5.1 Community consultation

Submission number(s)

23, 25, 57, 58, 79, 89, 115, 119, 125, 131, 133, 134, 141, 179

Issue description

Several respondents believe that the government has not adequately considered community concerns throughout development of the proposal. Key issues raised include:

- Request for a just and fair process for community consultation
- A respondent does not believe it is appropriate to request comment when design of the proposal is only 80 per cent complete
- Request for Transport to recognise the valuable feedback from previous consultation and consider this in the progression of the current proposal
- Dissatisfaction with the communication for the proposal and concerns that there has been a lack of community consultation
- Request for the Hartley Valley community to be further consulted, including a face to face meeting with Transport, acknowledging the community's knowledge of the area is more comprehensive than that of the proposal team
- The proposal should not go ahead without considering community suggestions.

Response

As discussed in Section 5 of the REF, engagement has been managed as part of the community and stakeholder engagement strategy for the Great Western Highway Upgrade Program.

Community engagement activities have been carried out throughout the proposal development stages as presented in Section 5.2.1 and 5.2.2 of the REF. Engagement activities have included stakeholder meetings and briefings, workshops, distribution of community updates, report publication and distribution, staffed displays and public submission opportunities. Questions, comments and issues raised by the community during consultation activities have informed the environmental assessment and the ongoing development of the proposal. A summary of these issues and where they have been addressed in REF is provided in Table 5-2 of the REF. The outcomes from community consultation activities have been considered when developing and refining the route options and design refinements for the proposal, as described in Section 2.4 of the REF.

This submissions report also forms part of the on-going consultation process. Following the public exhibition of the REF and consultation period, stakeholder and community submissions have been collated and responded to in this submissions report. The feedback received from the community in this report will be considered during future design stages and construction of the proposal. The 80 per cent concept design is put on public display to allow room for refinement as per the feedback received from the community, where feasible, at the 100 per cent design stage.

Transport has included the Hartley Valley community in consultation activities from 2008 onwards and is committed to continuing to work closely with the community throughout the proposal development, as discussed in Section 5.6.1 of the REF. It is acknowledged that the community's knowledge of the area and the community values of the area are more comprehensive than Transport and feedback from the community has been incorporated into the route selection process (see

Section 2.4 of the REF), design refinements and assessment of potential impacts (see sections 5 and 6.10 of the REF). The Technical Working Paper – Land use, property and socio-economic (Appendix M of the REF) has assessed the potential socio-economic impacts to the Hartley Valley and its residents, taking into consideration the community consultation carried out for the proposal. In accordance with the recommendations of Appendix M, on-going consultation with the community and other affected stakeholders will be required prior to construction and throughout construction (see Safeguard SE01 in Section 6.2 of this submissions report).

A CCS will be prepared for the proposal to facilitate communication with the local and regional communities including relevant Government agencies, Councils, adjoining landowners and businesses, residents, motorists, and other relevant stakeholders that may be affected by the proposal. This is required by Safeguard SE01 in Section 6.2 of this submissions report. The CCS will outline avenues for the community to provide further feedback and through which Transport will respond to community feedback.

Submission number(s)

23

Issue description

The respondent noted their objection to the proposal during community consultation carried out in 2012, noting the Hartley Valley rest areas were a key point of contention then and remain as one now. The respondent stated their communication with community members confirms widescale objection to the proposed rest areas.

Response

Transport acknowledges the opposition stakeholders hold for the proposed rest areas. However, as noted in responses in Section 2.3.4, the rest areas are a crucial road safety measure to make sure drivers of heavy vehicles have appropriate opportunities to rest and avoid driver fatigue. The proposed rest area locations were identified as a candidate locations due to their location in terms of distance from other rest areas, the availability of suitable land within the road reserve and the lack of locations in the built-up area of the Blue Mountains. While the rest areas cannot be moved for the reasons above, Transport appreciate the community's concerns and are continuing to look at improvements to the design to reduce the visual and noise impacts. Transport have also added facilities for light and recreational vehicles so the rest areas can benefit all road users. The new design has also been set lower into the landscape and the urban design is being developed further to integrate the rest areas into the surrounding landscape.

Submission number(s)

35

Issue description

The respondent believes that their concerns regarding the proposed vegetation impacts in the Hartley Valley were not respectfully acknowledged or addressed during an online meeting.

Response

The consultation sessions were held to ensure that the community members had further opportunity to provide feedback and Transport aims to address all concerns respectfully.

Section 6.1 of the REF and the BDAR (Appendix D of the REF) have considered the potential impacts to vegetation from the proposal. Transport have worked to avoid, minimise, mitigate then offset the proposals impacts to the surrounding environment. Where Transport is proposing to remove endangered ecological communities, the construction footprint has been reduced as much as is feasible. Where clearing cannot be avoided, Transport is required to offset these impacts, as described in Section 6.1.5 and Appendix D of the REF.

Transport will continue to refine the design and improve the urban design features to minimise the visual impact and to blend it into the surrounding environment during detailed design. As described in Safeguard LV02 of Section 6.2 of this submissions report, opportunities to minimise vegetation clearing and maximise revegetation and planting opportunities will be considered during detailed design.

Submission number(s)

47

Issue description

The respondent notes that the REF does not mention the Hartley Valley residents' opposition to the proposal since its inception.

Response

Section 5.2.1 of the REF presents a summary of the consultation activities at each stage of the proposal's development since 2008. Further, Section 5.2.2 of the REF details issues raised during public display of the Katoomba to Lithgow strategic corridor options, with further detail provided in the Great Western Highway Upgrade Program – Katoomba to Lithgow Community Consultation Summary Report (Transport for NSW, 2020) available at **nswroads.work/gwhd.**

As noted above, this submissions report forms part of the on-going consultation process for the proposal and community responses have been collated and responded to in this submissions report. Section 2.1 provides an overview of issues raised by the community and outlines that the majority of responses received from the community were opposed to the proposal.

Submission number(s)

47

Issue description

The respondent notes inadequate consideration of and communication with residents during previous Great Western Highway upgrades made it difficult for residents to enter and exit their properties safely.

Response

Property access would be maintained throughout construction and operation of the proposal, although some access may be relocated or reinstated to tie into new road levels as per environmental safeguard PL03 in Section 6.2 of this submissions report. Where possible, Transport would ensure that property access would be reinstated to a pre-existing condition or better as soon as construction works are complete. Transport will continue to consult with property owners and occupiers throughout the detailed design process regarding changes to access arrangements (Safeguard TT06). It is acknowledged that some local roads would not have direct access to the new Great Western

Highway and that road users would instead be directed to dedicated intersections. These specific intersections have been designed to minimise the potential risks to vehicles turning into fast moving traffic. Further, the addition of 10 new service roads would improve local connectivity without the need to access the new Great Western Highway for local trips.

Submission number(s)

105, 131, 132

Issue description

One respondent recounts their negative experience during a Transport-led consultation session, noting they received incorrect proposal information from the Transport representative. The respondent also states, based on Transport's actions during the session, they did not believe Transport showed respect the residents of Little Hartley as a minority group. Two respondents expressed dissatisfaction with the consultation session and believe that their questions were inadequately answered.

Response

One respondent has since been contacted by a Transport representative to discuss their negative experience during the Transport-led consultation. The Transport representative apologised for the negative experience and offered the individual the chance to share further information.

It is acknowledged that a few Transport representatives outside of the direct project team attended the consultation session who may not have been as knowledgeable about the specifics of the proposal. The information presented in the REF is correct and can be referred back to if an individual has further queries.

Please contact the project team at Transport for NSW if there are any further questions using 1800 953 777 or gwhd@transport.nsw.gov.au or send your written comments to

Great Western Highway Upgrade Program
Little Hartley to Lithgow REF and Concept Design
PO Box 334
Parkes NSW 2800

Submission number(s)

119

Issue description

The respondent suggests since Transport consulted with the public in 2013 there has been a lot of new people moving into the Hartley Valley who don’t have the historical understanding of the lasting impact the proposal will have on the Valley.

Response

For Transport, consultation with relevant stakeholders has been, and continues to be, a key priority in the development of the proposal. Consultation has not been limited to local community members, but have also involved government agencies, local councils, Aboriginal stakeholders, and broader interest groups (refer to Section 5 of the REF). Transport has consulted with a large range of stakeholders to gain an in-depth understanding of the issues related to the proposal, and have considered the

feedback where reasonable and feasible. Transport will continue to work closely with the community and relevant stakeholders through all stages of the proposal (refer to section 5.6 of the REF). This will include, but is not limited to:

- Provision of information via print, online and face-to-face means
- Provision of regular information updates via the proposal web page and virtual portal
- Face-to-face and online consultation/drop-in sessions
- Engagement with affected landowners and community stakeholder groups about the proposal and key design decisions that may impact them.

Submission number(s)

137

Issue description

The respondent requests a site meeting with relevant proposal team members to discuss their concerns regarding the proposal.

Response

Various members of the proposal team have visited the site over the past two months to conduct site investigations and have discussions with directly impacted residents and businesses. Affected residents and businesses were also contacted over the phone due to the limitations of the COVID-19 pandemic.

Opportunities to express concerns to Transport in person were provided through two face-to-face consultation sessions held on 4 and 7 December and four online consultation sessions held on 30 November and 2, 9 and 11 December. Further opportunity for consultation with Transport will be provided pre-construction and throughout construction in accordance with the CCS which will be prepared in accordance with Safeguard SE01 in Section 6.2 of this submissions report.

2.5.2 Aboriginal consultation

Submission number(s)

7, 15, 31, 32, 35, 46, 50, 62, 79, 127, 147

Issue description

Several respondents raised the following issues regarding consultation:

- Consultation with the relevant Aboriginal cultural groups/leaders should be carried out
- The local Aboriginal land council should be consulted with on the proposal
- Issues posed during the online consultation were not sufficiently addressed
- Request for the priorities of the Aboriginal community to be considered
- Request for Yindyamarra (respect) and acknowledgement from Transport, and request for the local Wiradjuri elders and mob to be consulted
- Insufficient consultation has been carried out
- Request for further consultation regarding the preservation of Aboriginal heritage sites.

Response

Consultation with Aboriginal stakeholders for the proposal has been carried out in accordance with the Procedure for Aboriginal Cultural Heritage Consultation and Investigations (PACHCI) (Roads and Maritime Services, 2011) and the Aboriginal Cultural Heritage Consultation Requirements for Proponents (the Consultation Requirements) (DECCW, 2010), as referred to in Section 5.3 of the REF and Section 3 in Appendix G of the REF. Consultation with Aboriginal stakeholders has been a key priority throughout the design development with consultation commencing as part of the initial study area investigations in 2008 and continuing throughout corridor and route selection with the Aboriginal Focus Group (AFG). Nominated representatives for Deerubbin and Bathurst Local Aboriginal Land Councils (LALCs), Native Title and Traditional Owner Groups were engaged in Stage 2 of the Aboriginal consultation process to prepare for the cultural heritage survey report and archaeological survey. In Stage 3, 34 RAPs participated in the AFG meeting to aid the preparation of the Aboriginal Cultural Heritage Assessment Report (ACHAR) (refer to Appendix G of the REF). In Stage 4, a copy of the ACHAR will be provided to Heritage NSW and all RAPs for review and comment, and management measures were proposed. Transport will aim to reduce impacts where possible and additional consultation with RAPs is planned for future stages of the proposal consistent with the relevant guidelines as summarised in Section 5.3 of the REF.

Submission number(s)

50, 56, 127

Issue description

One respondent noted their previous request for meaningful consultation with the Wiradjuri people. One respondent expresses concern about the perceived lack of consultation with the Wiradjuri people. One respondent states that they have not been consulted with and that they believe negotiation would allow them to avoid impacts to half of the identified Aboriginal heritage sites.

Response

Transport acknowledges that the Warrabinga-Wirdajuri people have an active native title claim for the proposal area, and as noted in Section 6.4.2 and Appendix G of the REF, representatives from Warrabinga-Wiradjuri Native Title group were consulted during the archaeological survey. Representatives from Local Aboriginal Land councils and Traditional Owner groups were also engaged to participate in the archaeological survey where the proposal area traversed their boundaries (refer to Section 3 of Appendix G of the REF). Additional consultation with RAPs is planned for future stages of the proposal consistent with the relevant guidelines (refer to Table 5-3 of the REF).

Submission number(s)

23, 107, 175

Issue description

Two respondents state that notification of the consultation date to the Aboriginal community was provided less than 24 hours until commencement. One respondent states that insufficient time was given to the community to review and respond to the REF.

Response

The face-to-face consultation sessions were held on 4 and 7 December 2021 (refer to the REF for further details on these sessions). The timing of these sessions was displayed on the project website and in the REF. A targeted consultation session focussing on Aboriginal cultural heritage was also carried out on 7 December 2021 (before the main session). Aboriginal community members were informed via email and follow up phone calls.

The Aboriginal community was also consulted in accordance with the PACHCI guidelines, as described in Section 5.3 of the REF.

The proposal was on public display and open for comment a total of 55 days from 23 November 2021 to 16 January 2022.

There is no statutory public exhibition period for development that is permitted without consent; however, Transport policy requires that an REF placed on public exhibition must be open for comments for a minimum of 21 days.

When considering the exclusion period of 20 December to 10 January identified in Clause 16 of Schedule 1 of the EP&A Act, the proposal was publicly displayed for a total 33 days, which exceeds the 28 day statutory public exhibition requirements set for the exhibition of an EIS under the EP&A Act.

Submission number(s)

107

Issue description

The respondent noted during a consultation session the lack of transparency from Transport in informing the community of an additional seven sites of Aboriginal significance, noting that if not prompted during questions the community would not have been advised.

Response

Consultation sessions provide general information and a Q&A opportunity for the community. All information regarding potential impacts to Aboriginal heritage are discussed in Section 6.4 and Appendix G of the REF.

Submission number(s)

143, 166

Issue description

Two respondents request further consultation regarding the preservation of Aboriginal heritage sites, and to be involved in future matters pertaining to Aboriginal Cultural Heritage planning and management.

Response

Transport is committed to further consultation with Aboriginal stakeholders in accordance with best practice guidelines, including the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW, 2010b), and the *Procedure for Aboriginal cultural heritage consultation and investigation* (PACHCI) (Roads and Maritime Services, 2011). The AHMP will be developed in

consultation with RAPs as detailed in Safeguard AH01 in Section 6.2 of this submissions report. Ongoing consultation with key stakeholders, including the Aboriginal community, will be outlined in the CCS as detailed in Safeguard SE01 in Section 6.2 of this submissions report.

2.5.3 Public display period

Submission number(s)

17, 23, 61, 79, 89, 113, 131, 132, 133, 144, 170, 172, 173

Issue description

Several respondents raised the following issues regarding the public display period:

- The initially proposed four-week consultation period was too short given the scale of the proposal, which indicates that Transport is not committed to meaningful communication and receipt of feedback from the public
- Having the consultation period following the COVID-19 pandemic and over the busy Christmas and New Year's break was inappropriate
- The short consultation period was in breach of Clause 16 of Schedule 1 of the EP&A Act as it includes days falling within the statutory exclusion (20 December to 10 January)
- Request for Transport to extend the consultation period to the 14th of February 2022.

Response

The proposal was on public display and open for comment a total of 55 days from 23 November 2021 to 16 January 2022.

There is no statutory public exhibition period for development that is permitted without consent; however, Transport policy requires that an REF placed on public exhibition must be open for comments for a minimum of 21 days.

When considering the exclusion period of 20 December to 10 January identified in Clause 16 of Schedule 1 of the EP&A Act, the proposal was publicly displayed for a total 33 days, which exceeds the 28 day statutory public exhibition requirements set for the exhibition of an EIS under the EP&A Act.

Transport delivered a combination of online and face-to-face consultation sessions including:

- General online sessions held on the 30th November and 11th December 2021
- Targeted online sessions held on the 2nd and 9th of December 2021
- Face-to-face sessions held on the 4th and 7th of December 2021

In consideration of the COVID-19 restrictions, bookings for personal phone consultations with the Transport project team were also available to the public.

Targeted consultation with local stakeholder groups, Lithgow City Council, utility providers and other government agencies will continue throughout proposal development and construction.

Transport is committed to further consultation with the community during future development of the proposal.

2.5.4 Public display submission form

Submission number(s)

32, 65

Issue description

Two respondents were dissatisfied with the public display submission form. One respondent noted that the feedback method is not very user-friendly as it does not allow for much elaboration and makes it difficult to edit responses. One respondent believed that the submission form is intended to limit discussion to predetermined topics.

Response

Transport appreciates the feedback regarding the online submission form and will consider this on future projects.

Transport acknowledge online forms are not always accessible or the preferred method of providing comment. For this reason, alternative options for submitting comment including via email and hard copy were also permitted, as well as a phone call option where submissions could be verbally provided to a Transport representative.

2.5.5 Request for information

Submission number(s)

131, 132

Issue description

Two respondents requested for the design drawings to be made publicly available.

Response

The key features of the proposal, including the design, construction footprint, retaining walls, drainage and water quality structures, areas of cut and fill, are shown on Figure 3-2 of the REF.

Please contact the project team using 1800 953 777 or gwhd@transport.nsw.gov.au if there are any further queries.

Submission number (s)

137

Issue description

The respondent noted that in the last face-to-face consult the respondent noted their property had not had any sound monitoring completed. The respondent requests that they receive a copy of the sound monitoring survey once completed.

Response

Sound monitoring at individual properties is not carried out as part of the noise assessment as it is not feasible to monitor at all properties along the proposal alignment. Long term unattended noise monitoring was completed in the construction footprint between March and May 2021 at 8 locations. The measured noise levels have been used to determine the existing noise environment and to set the criteria used to assess the potential impacts from the proposal. The assessment uses several Noise Catchment Areas (NCAs) that reflect the land uses in the construction footprint and the existing background noise levels and the likely impacts from the proposal. The measured existing noise levels are representative of the background noise levels at receivers that would likely be most affected by the construction and operation of the proposal in each NCA. This methodology is in accordance with Transport's *Noise Criteria Guideline* and the *Road Noise Policy* (DECCW, 2011).

Transport have committed to further noise monitoring during detailed design. Any changes in design will include additional noise monitoring and necessary adjustments to the noise model. To assist in understanding the noise impacts of the highway upgrade, noise monitoring at a location representative of residents at this location will be carried out during the detailed design phase and again following completion of the proposal. Potential noise mitigation measures are to be considered as per Safeguard NV13 in Section 6.2 of this submissions report.

Transport will also conduct noise monitoring after construction and once traffic patterns have adjusted to the upgraded highway, to validate the post-construction noise model. In the circumstance that the validation of the model indicates additional receivers are eligible to receive consideration of noise mitigation measures, these will be addressed at that time.

2.5.6 Minister notification

Submission number(s)

49

Issue description

The respondent notes their submission was also sent to the Minister of Infrastructure and Minister of Regional Transport regarding their views on the proposal.

Response

Transport acknowledges that the Minister of Infrastructure and Minister of Regional Transport have been contacted and are aware of the proposal.

2.5.7 Response to submissions process

Submission number(s)

79

Issue description

The respondent notes their concern that Transport will simply count their submission and will not thoughtfully consider the issues raised.

Response

The purpose of this submissions report is to respond to all issues raised in the submissions received during the public display period in a detailed and thorough manner. This submissions report provides details of where changes to environmental safeguards have been proposed and the outcomes of further environmental assessments that have been carried out in response to submissions received.

2.6 Biodiversity

2.6.1 Biodiversity assessment

Submission number(s)

6

Issue description

The respondent suggests there will be low biodiversity impacts due to previous disturbance.

Response

As identified in Section 6.1.2 of the REF, of the 319 hectares of land within the construction footprint, about 215 hectares is cleared. Cleared land comprises mostly of cleared grassland on rural and rural-residential land.

As concluded in Section 6.1.3 of the REF, the proposal is not likely to significantly impact threatened species or their habitats, within the meaning of the BC Act or the EPBC Act. The proposal was assessed as likely to have a significant impact on the White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland as defined under the BC Act and the EPBC Act and credits will be provided to offset these impacts in accordance with the BC Act.

Submission number(s)

23, 46, 89, 90, 109, 119, 142

Issue description

Several respondents suggest that the biodiversity assessment carried out for the proposal is inadequate.

Response

The biodiversity assessment involved a combination of desktop assessment, habitat suitability assessment, field surveys and impact assessment which meet the standards of a Biodiversity Assessment Report (BDAR). The assessment presented in the BDAR was carried out in accordance with the following survey and assessment requirements:

- *Biodiversity Assessment Method* (BAM) (DPIE (EES), 2020a)
- *Policy and Guidelines for fish habitat conservation and management* (DPI, 2013)
- *Risk Assessment Guidelines for Groundwater Dependent Ecosystems* (DPI, 2012)
- *NSW Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities – Working Draft Nov 2004* (DEC, 2004)
- *NSW Threatened Species Survey and Assessment Guidelines: Field survey methods for fauna (Amphibians)* (NSW Department of Environment and Climate Change (DECC, 2009)
- *Matter of National Environmental Significance Significant Impact Guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999* (CoA, 2013).

As described in Section 6.1.1 of the REF, in order to identify species for targeted field surveys, a list of candidate species identified by the BAM Calculator known or considered likely to occur was refined

based on the known geographic distribution and the suitability of habitat features present, including associated plant community types and soil and geological preferences. A habitat assessment was then carried out to determine the likelihood for each of the listed candidate species to occur and, as such, require targeted field survey and assessment of potential impacts of the proposal. Targeted vegetation, flora and fauna field surveys were carried out in March, April and May 2021 to validate the results of the desktop and habitat assessments.

Potential impacts to biodiversity as a result of the proposal were identified and assessed. This included an assessment of direct and indirect construction and operational impacts. Mitigation measures for avoiding, managing or reducing impacts on biodiversity values during detailed design, construction and operation were identified (refer to Section 6.2). Offsetting requirements for any residual impacts that cannot be avoided, minimised or mitigated were outlined and discussed.

An addendum to the BDAR (refer to Section 5.1 and Appendix B of this submissions report) has been prepared since the public exhibition of the REF. Several species identified as requiring assessment have seasonal survey requirements, as outlined in Section 5.3.2 of the BDAR (Appendix D of the REF), that were unable to be met prior to the exhibition of the REF for public display. Additionally, several submissions have been received that include concerns that impacts on Platypus (*Ornithorhynchus anatinus*) were insufficiently explored, triggered by recent sightings of the species recorded by community members in the River Lett within the subject land. Refer to Section 1.2.1 in the BDAR (Appendix D of the REF) for information on what the 'subject land' encompasses. The Addendum BDAR considers the impacts on native vegetation, threatened fauna, threatened fauna (including the Gang-gang Cockatoo, Booroolong Frog, threatened microbat species, as well as the locally significant Platypus).

2.6.2 Connectivity

Submission number(s)

30

Issue description

The respondent requests a concept plan that outlines how new habitat corridors will be created to ensure that there is no net loss of biodiversity due to the proposal.

Response

As described in Table 2-1 of the BDAR (Appendix D of the REF), there are no mapped wildlife corridors within the construction footprint, however the Blue Mountains Western Escarpment wildlife corridor occurs between Mount Victoria and Little Hartley to the east of the proposal. More broadly, the proposal is located to the south and west of expansive vegetation of the Greater Blue Mountains area. The Blue Mountains National Park lies to the east and Newnes Plateau to the north. Narrow remnants of native vegetation pass through the construction footprint in a north-south orientation linking vegetation in these expanses to more fragmented vegetation on rural land and riparian corridors. These corridors are important for habitat connectivity to native vegetation remnants to the immediate south and conservation areas further on such as Kanangra-Boyd National Park.

Any potential habitat fragmentation will be mitigated via connectivity measures as outlined in Section 6.2 of this submissions report. These will be implemented in accordance with the *Wildlife Connectivity Guidelines for Road Projects* (RTA, 2011) (Safeguard BI20). These include the provision of fauna underpasses (ie concrete box culverts) which would facilitate the safe crossing of fauna beneath the road.

2.6.3 Conservation area

Submission number(s)

12

Issue description

The respondent requests that the proposal does not impact the established conservation area at the top of River Lett Hill on the 'Morning View' and 'Glenroy' properties.

Response

The REF identified potential conservation areas using desktop analysis. The only identified conservation area in proximity to the proposal is Kanangra Boyd National Park, which is located south of the proposal. Though the identified area is not of official conservation status, the BDAR (Appendix D of the REF) acknowledges that the area contains native vegetation that will be impacted by the proposal.

As stated in section 6.1.3 of the REF, biodiversity considerations were considered through the corridor and route options assessment and the design refinement process. Direct and indirect biodiversity impacts were avoided or minimised through:

- Selection of a route option with lower native vegetation clearing required
- Selection of a route option that largely follows the existing highway alignment and therefore has the least impact to habitat connectivity
- Making provision for the demarcation, ecological restoration, rehabilitation and/or ongoing maintenance of retained native vegetation habitat within the construction footprint.

Several safeguards would be put in place to minimise the potential impacts of vegetation clearing, as outlined in Section 6.2 of this submissions report. Native vegetation and habitat removal will be minimised through detailed design (Safeguard BI02). This will include further consideration for the placement of ancillary facilities (including drainage and sediment basins) currently positioned in native vegetation and high value areas will be considered during the detailed design stage.

Habitat will be replaced or re-instated in accordance with *Guide 5: Re-use of woody debris and bushrock* and *Guide 8: Nest boxes of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA, 2011), as per Safeguard BI35 of this submissions report. Modified limbs salvaged from removed vegetation in the subject land will be preferenced over nest boxes for artificial hollow construction. In addition, artificial hollows will be constructed, including hollows suitable for Gang-gang Cockatoos.

Landscape planting will include indigenous species endemic to the area. Locally collected seeds or bioregionally-sourced indigenous seeds and plants will be used where feasible, in accordance with Safeguard LV03.

2.6.4 Flora and fauna

Submission number(s)

7

Issue description

The respondent requests that seeds be collected from local indigenous trees prior to clearing.

Response

Landscape planting and maintenance will be in accordance with the Lithgow City Council Weed List and include indigenous species endemic to the area as per Safeguard LV03 in Section 6.2 of this submissions report. Locally collected seeds or bioregionally-sourced indigenous seeds and plants will be used where feasible. Transport has initiated seed collection for the Great Western Highway Upgrade Program for use in road side plantings post construction.

Submission number(s)

20, 23, 25, 29, 30, 32, 35, 53, 63, 68, 73, 81, 95, 96, 105, 109, 119, 132, 133, 137, 142, 145, 156, 174

Issue description

Several respondents suggest the proposal would have negative impacts for flora and fauna.

Response

The potential impacts of the proposal on biodiversity were investigated during the REF through a combination of a desktop assessment, habitat suitability assessment, field surveys and the assessment of biodiversity impacts. These findings are presented in Section 6.1 of the REF and the BDAR (Appendix D of the REF). As described in Section 6.1.3 of the REF the proposal has sought to avoid and minimise impacts to flora and fauna through:

- Selection of a route option with lower native vegetation clearing required and the least impact to habitat connectivity
- Provision of a number of fauna crossings to provide fauna connectivity across the highway
- Provision of fauna fencing in selected areas of wildlife connectivity to reduce the risk of vehicle strike and fauna mortality as well as guide fauna towards fauna crossing structures.

Potential impacts to flora and fauna were identified and measures to avoid, minimise or mitigate impacts were identified and will be implemented through the Flora and Fauna Management Plan, in accordance with Safeguard BI01 (refer to Section 6.2 of this submissions report). Key impacts to flora and fauna identified in the REF and updated in this submissions report include:

- A total of 75.89 hectares of native vegetation will be removed for the proposal, with a total of 142 hollow-bearing trees. The REF identified that 8.5 hectares of native vegetation will be subject to increased edge effects as a result of the proposal due to the creation of one or more new edges within previously unfragmented vegetation. Vegetation clearing will be further minimised through detailed design and siting of ancillary facilities in areas of cleared land where feasible, in accordance with Safeguards BI02 and BI03. Artificial tree hollows will be installed to mitigate the impact of loss of the hollow bearing trees in accordance with Safeguard BI35 in Section 6.2 of this submissions report

- The proposal was assessed as likely to have a significant impact on the critically endangered ecological community White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland, listed as critically endangered under the BC Act, therefore a BDAR was prepared (Appendix D of the REF). Offsets have been identified in accordance with the requirements of the BC Act for ecosystems, species and ecosystems credits for both direct and indirect impacts. Final offset calculations will be carried out following further design development and offsets will be delivered by Transport in accordance with the BC Act
- Fauna injury and mortality were identified in Section 6.1.3 of the REF as an inherent risk of the proposal, which in part, could be mitigated by implementing appropriate safeguards. Measures to reduce accidental injury or mortality to fauna during both construction and operation are proposed in Safeguards BI31 and BI34 in Section 6.2 of this submissions report
- The potential for waterways to be temporarily blocked or diverted, which may temporarily impact fish passage. These impacts are unlikely to affect any threatened species and will be temporary in nature and will be mitigated through Safeguards BI13 to BI15 in Section 6.2 of this submissions report
- Potential impacts to the Purple Copper Butterfly and its habitat have been largely voided by the proposal through establishment of exclusion zones as outlined in Section 6.1.1 of the BDAR
- Impacts to micro-bats have been further assessed and are described in Section 5.1 of this submissions report. Measures to mitigate impacts to microbats have been identified in Safeguards BI28, BI29, BI31, BI32 and BI33 in Section 6.2 of this submissions report
- Potential impacts to platypus have been further assessed in response to community feedback on sighting of platypus within the construction footprint and are presented in Section 5.1 of this submissions report. Safeguard BI38 has been included in Section 6.2 of this submissions report to mitigate impacts
- The spread of pathogens, including weeds and the potential for the spread of chytrid fungus have been identified as potential impacts in Section 6.1.3 of the REF and Section 5.1 of this submissions report. Safeguards BI27 and BI36 has been included in Section 6.2 of this submissions report to mitigate and manage these impacts.

Submission number(s)

22

Issue description

The respondent believes flora and fauna will be protected by mitigation measures.

Response

Safeguards and mitigation measures aimed at minimising biodiversity impacts are outlined in Section 6.2 of this submissions report. Additional safeguards have been identified to mitigate impacts identified in the Addendum BDAR (see Appendix B of this submissions report) and summarised in Section 5.1. The updated list of safeguards is provided in Section 6.2 of this submissions report. Additionally, the Biodiversity Offset Scheme (BOS) will be implemented to minimise the impacts of vegetation clearing.

Submission number(s)

101

Issue description

The respondent requests alternative habitats are established for native fauna before construction, and requests that pest species are surveyed and controlled.

Response

As described in Section 6.1.3 of the REF, during construction fauna species may be temporarily affected by habitat clearing. However, the species found within the construction footprint are highly mobile and are likely to seek suitable habitat elsewhere. Several mitigation measures have been developed to minimise the impacts of clearing activities on fauna species including:

- BI04: Pre-clearing surveys will be carried out in accordance with Guide 1: Pre-clearing process of Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011)
- BI05: Vegetation and habitat removal will be carried out 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)
- BI06: Native vegetation will be re-established in accordance with Guide 3: Re-establishment of native vegetation of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011)
- BI07: The unexpected species find procedure is to be followed under Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) if threatened ecological communities, not assessed in the biodiversity assessment, are identified in the proposal site
- BI09: Fauna will be managed in accordance with Guide 9: Fauna handling of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011)
- BI10: Habitat will be replaced or re-instated in accordance with Guide 5: Re-use of woody debris and bushrock and Guide 8: Nest boxes of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011). Modified limbs salvaged from removed vegetation in the subject land will be preferred over nest boxes for artificial hollow construction
- BI35: Artificial Hollow construction would include hollows suitable for Gang-gang Cockatoos.

It is acknowledged in Section 6.1.3 of the REF that activities such as vegetation clearing, habitat removal, increased noise and human presence as a result of the proposal have the potential to disperse pest species across the surrounding landscape and increase the ability of such species to utilise habitats during construction and operational phases. The use of fauna fencing along sections of the Great Western Highway will reduce the amount of roadkill which may otherwise result in a rise of predatory and scavenger species hence the proposal is not considered to increase pest animal populations more than what already exists.

Submission number(s)

101

Issue description

The respondent requests that a Flora and Fauna Management Plan is composed and made publicly available, and requests that additional nesting areas and plantings of food source plants are included in the Plan.

Response

A Flora and Fauna Management Plan will be prepared in accordance with Transport's *Biodiversity Guidelines: Protecting and Managing Biodiversity on Projects* (RMS, 2011) and implemented as part of the CEMP, in accordance with Safeguard BI01 (see Section 6.2 of this submissions report). The community will be updated on the plan as appropriate. It will include, but not be limited to:

- 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 Landscape Guideline (RMS, 2008)
- Pre-clearing survey requirements

  Procedures for unexpected threatened species finds and fauna handling
- Procedures addressing relevant matters specified in the Policy and guidelines for fish habitat conservation and management (DPI Fisheries, 2013)
- Protocols to manage weeds and pathogens.

Safeguards commit the proposal to re-establishing native vegetation (Safeguard BI06) and replacement or reinstatement of habitat (Safeguard BI10) in accordance with Transport's guidelines. Landscape planting will use bio-regionally sourced indigenous seeds and plants will be used in landscape planting where feasible (see Safeguard LV03 in Section 6.2 of this submissions report).

Submission number(s)

117

Issue description

The respondent questioned where the results of the 2021-2022 spring/summer surveys could be accessed.

Response

An Addendum BDAR has been prepared which includes the additional surveys identified in the BDAR, as presented in Section 5.1 and Appendix B of this submissions report.

Submission number(s)

119, 134

Issue description

Two respondents expressed concern over the potential impacts of the proposal on local wildlife. In particular, the respondents note that they had observed Wedge Tailed Eagles and Kestrels nesting in the trees that surround the River Lett.

Response

The Biodiversity Development Assessment Report (Appendix D of the REF) identified Wedge Tail Eagles and Kestrels as potentially existing within the construction footprint. However, the impacts to these species would be negligible therefore a more detailed investigation was not required. Both species are highly mobile and would explore adjacent areas in pursuit of favourable habitat.

Notwithstanding this, a Flora and Fauna Management Plan will be prepared in accordance with Transport's *Biodiversity Guidelines: Protecting and Managing Biodiversity on Projects* (RMS, 2011) and implemented as part of the CEMP. This plan will involve pre-clearing survey requirements and procedures for unexpected threatened species finds and fauna handling as outlined in Section 6.2 of this submissions report.

As described in Section 6.1.3 of the REF the proposal includes the provision of a fauna exclusion fence on both sides of the highway in selected areas. This fauna exclusion fence will prevent fauna from accessing the road and being subjected to vehicle strike, which will reduce the amount of roadkill for scavenger species such as Wedge Tailed Eagles and Kestrels on the road. The design specifications of the fauna exclusion fence will be developed during further design development.

Submission number(s)

23, 90, 101, 109, 117, 119, 149, 177

Issue description

Several respondents expressed concern for wildlife crossing the proposal and questions whether any fauna crossing structures will be put in place.

Response

As described in Section 3 of the REF, the proposal will include several culverts which will double as fauna crossings. These combined fauna crossings and culverts will facilitate the safe crossing of fauna beneath the roads well as conveying surface water flows. These will include a raised bench on one side of the base of the culvert, to allow for the dry passage of animals during periods of high flow. The proposed fauna crossing culverts are single cell concrete box culverts 3.3 metres by 3.3 metres to allow for crossing of large mammals such as Common Wallaroos (*Osphranter robustus*) and Eastern Grey Kangaroos (*Macropus giganteus*). Additionally, two existing large box culverts will be maintained and extended at Boxes Creek and Rosedale Creek, which will include fauna friendly design elements to encourage fauna crossing. Design of the fauna crossing culverts will be in accordance with *Wildlife Connectivity Guidelines: Managing wildlife connectivity of road projects* (draft) (Roads and Maritime, 2011) and best available knowledge from other Transport projects.

As described in Section 6.1.3 of the REF, fauna fencing will be installed in wildlife connectivity areas to reduce the risk of vehicle strike and fauna mortality as well as guide fauna towards the fauna crossing culverts.

2.6.5 Habitat removal

Submission number(s)

15

Issue description

The respondent notes the vegetation on their property is frequented by Gang-gang Cockatoos, and that removal of this vegetation would negatively impact the cockatoos. Further, the respondent is concerned other proposed vegetation removal on their property would limit the favourable habitat for kangaroos, wallabies and wallaroos.

Response

Further surveys and assessment of the impacts of the proposal on the Gang-gang Cockatoo (refer to Section 5.1 and Appendix B of this submissions report) were carried out in December 2021. Gang-gang Cockatoos were recorded flying overhead in the subject land near the Jenolan Caves Road intersection as well as feeding in trees in Hartley Nature Reserve outside the subject. Results of the recent surveys support the assessment that the area is used as foraging habitat, however, do not suggest breeding is occurring within the subject land nor that the proposal will significantly impact breeding habitat for the species in the area.

As described in Section 6.1.3 of the REF, kangaroos, wallabies and wallaroos are all highly mobile species which would most likely explore other regions for suitable habitat and are unlikely to be significantly affected by habitat removal associated with the proposal.

To minimise impacts associated with habitat clearing, several safeguards were outlined in Section 6.2 of this submissions report. In particular, native vegetation and habitat removal will be minimised through detailed design (Safeguard BI02). Further mitigation was identified for the Gang-gang Cockatoo including the creation of suitable artificial hollows specifically for the Gang-gang Cockatoo (Safeguard BI35). To minimise impacts to fauna species during construction, vegetation and habitat removal will be carried out 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) (Safeguard BI05 in Section 6.2 of this submissions report).

Submission number(s)

30

Issue description

The respondent is concerned the design does not align with the Australian government's target for zero deforestation by 2030 and requests for broadscale clearing to stop now.

Response

During the United Nation's Climate Change Conference (COP26) Australia amongst several other countries pledged to end global deforestation by 2030. The Australian government is in the process of finalising the plan to achieve this target and no legislation is currently in place.

As described in Section 5.1, below, a total area of 75.89 hectares of native vegetation would require removal for the proposal, with the majority of the construction footprint comprising cleared pastures or grassland on rural-residential land (215 hectares). The construction footprint of the proposal has been minimised where possible, and vegetation clearance during construction will be reduced where possible. Safeguard BI02 commits to minimising vegetation and habitat removal through detailed design and Safeguards LV02 and NH10 commit to maximising revegetation. Additionally, as described in Section 6.1.5 of the REF, a biodiversity offset strategy (BOS) will be required in accordance with the Guideline for Biodiversity Offsets (Roads and Maritime Services, 2016) for potential impacts to the BC Act and EPBC Act listed TEC and threatened species habitat. Offsets may be delivered through a range of mechanisms, including securing offset properties under an appropriate legal instrument, purchasing and retiring biodiversity credits, paying into the Biodiversity Conservation Fund or progressing stewardship Site Agreements on suitable properties in accordance with the Guideline for Biodiversity Offsets (Roads and Maritime, 2016).

Submission number(s)

34

Issue description

The respondent is concerned about the proposal's impact on creeks in the construction footprint which serve as habitats for local wildlife.

Response

It is acknowledged in Section 6.1.3 of the REF that during construction there is a potential for waterways to be temporarily blocked or diverted. It was concluded that, while blocking or diversion of drainage lines will block fish passage, it is unlikely to affect any threatened species and would be temporary in nature. The proposal would impact a total of 16.26 hectares of mapped Key Fish Habitat. However, it is noted that Key Fish Habitat mapping is conservative and estimates a considerably wider area of waterway than actual and as such, impacts to actual fish habitat would be considerably less. Safeguards BI13 to BI15 have been included in Section 6.2 of this submissions report to minimise impacts to aquatic habitats. Safeguard BI14 requires creek works and bridges to be designed in accordance with the *Policy and Guidelines for Fish Friendly Waterway Crossings* (DPI, 2003) and Safeguard BI15 requires instream works to be carried out during periods of low flow where possible. Where not possible, any creek diversions will require a permit from DPI (Fisheries). Opportunities to provide for habitat connectivity will be investigated during detailed design in accordance with Safeguards BI20, BI22 and BI23.

The potential for water quality impacts including increased turbidity, which can reduce visual amenity, and increased nutrients, which can lead to algal blooms and affect the quality of fish habitat, are also identified in Section 6.1.3 of the REF. Water quality impacts will be managed through development and implementation of Construction Soil and Water Management Plan and a surface water quality monitoring program, in accordance with Safeguard SW01.

The proposal is located within the *State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011* (Drinking Water Catchment SEPP) catchment area. Under the Drinking Water Catchment SEPP, there is a requirement to consider whether the proposal would have a neutral or

beneficial effect (NorBE) on water quality. The results of the assessment are presented in Table 6-79 of the REF. The assessment showed that without mitigation the proposal would increase the pollutant loads in comparison to the existing conditions. However, once the proposed mitigation measures are implemented, the pollutant loads are reduced to a level that is an improvement to the existing conditions.

As noted above, potential impacts to platypus have been further assessed in response to community feedback on sighting of platypus within the proposal area and are presented in Section 5.1 of this submissions report. Safeguard BI38 has been included in Section 6.2 of this submissions report to mitigate impacts.

Submission number(s)

101

Issue description

The respondent requests that habitat areas include nest boxes installed in unaffected trees, protection for ground dwelling fauna, and planting of replacement trees and food sources ahead of construction activities. The respondent requests that seed collection and divot transplanting is carried out as soon as possible.

Response

Vegetation clearing would be carried out progressively to minimise impacts to fauna. Re-vegetation would also be carried out progressively to minimise impacts to fauna habitat, where feasible, but will be dependent on construction staging. Nest boxes or other fauna habitat measures, where feasible, would be installed prior to construction commencing. Habitat will be replaced or re-instated in accordance with *Guide 5: Re-use of woody debris and bushrock* and *Guide 8: Nest boxes of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA, 2011), as per Safeguard BI35 of this submissions report. Modified limbs salvaged from removed vegetation in the subject land will be preferenced over nest boxes for artificial hollow construction. In addition, artificial hollows will be constructed, including hollows suitable for Gang-gang Cockatoos.

A Flora and Fauna Management Plan will be prepared in accordance with Transport's *Biodiversity Guidelines: Protecting and Managing Biodiversity on Projects* (RMS, 2011) and implemented as part of the CEMP (Safeguard BI01).

Transport has engaged a contractor to carry out seed collection commencing in early April 2022.

Landscape planting will include indigenous species endemic to the area. Locally collected seeds or bioregionally-sourced indigenous seeds and plants will be used where feasible, in accordance with Safeguard LV03.

Submission number(s)

23

Issue description

The respondent suggests that almost three million square metres would be disturbed by construction that would leave a major environmental scar on the Valley.

Response

A total of 290.51 hectares of vegetation would be removed for the proposal of which 75.89 hectares is native based on the Addendum BDAR (Appendix B of this submissions report).

Several safeguards aimed at reducing the impact of habitat clearing during detailed design are included in Section 6.2 of this submissions report (refer to Safeguards BI02 and LV02). Safeguard BI02 commits to further consideration for the placement of ancillary facilities (including drainage and sediment basins) currently positioned in native vegetation and high value areas will be considered during the detailed design stage. Opportunities to maximise revegetation of disturbed areas will be carried out in accordance with Safeguards LV02, NH10 and NH11 to provide visual screening. An Urban Design Plan will be prepared and implemented in accordance with Safeguard LV01 that will provide details on how the design principles and objectives, including the provision of tree planting to mitigate the scale of the proposed infrastructure, reinstating the vegetation character of the area, framing views and providing amenity along the road corridor.

2.6.6 Mitigation measures

Submission number(s)

5

Issue description

The respondent states that biodiversity should be protected through studies and actions.

Response

As described in Section 6.1.1 and further detailed in Appendix D of the REF, the methodology for the biodiversity assessment included a desktop assessment, habitat suitability assessment, field surveys and the assessment of biodiversity impacts. Further studies have been carried out in response to community feedback and the seasonal survey requirements for several species, the findings of which are documented in Section 5.1 and Appendix B of this submissions report. Biodiversity will be protected throughout construction and operation through the implementation of the biodiversity safeguard measures as outlined in Section 6.2 of this submissions report. In particular, a Flora and Fauna Management Plan will be prepared in accordance with Transport's Biodiversity Guidelines: Protecting and Managing Biodiversity on Projects (RMS, 2011) and implemented as part of the CEMP (Safeguard BI01, Section 6.2 of this submissions report).

Submission number(s)

6

Issue description

The respondent suggests impacts on endangered species can be managed.

Response

Further refinement to the safeguards to protect threatened species has been carried out in response to the findings of the seasonal surveys and surveys for platypus, which are presented in Section 5.1 and Appendix B of this submission report. Impacts to endangered species will be minimised through the implementation of the safeguard measures as outlined in Section 6.2 of this submissions report.

2.6.7 Noise and vibration

Submission number(s)

25, 91, 102, 117, 145

Issue description

The respondents are concerned about the impact of noise and vibration on native fauna and grazing stock. One respondent is particularly concerned about impacts on platypus in River Lett, kangaroos, wombats and their access to bushland and water from River Lett, and birds including the Kookaburra.

Response

As outlined in Section 6.1.3 of the REF, the construction phase of the proposal may cause temporary disturbance to wildlife. The impact of noise and vibration on fauna and grazing animals would likely be localised to the construction footprint and would be unlikely to have a significant, long-term impact on fauna or grazing animals. Most locally occurring fauna would likely relocate from areas adjacent to the highway which are indirectly impacted by noise and to more suitable areas of habitat and sources of water further afield for the duration of construction.

2.6.8 Offsets

Submission number(s)

16, 101

Issue description

The respondents stated the use of biodiversity offsets is insufficient as it is impossible to replace the ecological value of established ecosystems.

Response

As described in Sections 2 and 6.1.3 of the REF the proposal has sought to avoid and minimise impacts to the environment during options selection and design refinement. To minimise the impacts of the proposal on the environment and, in particular, to minimise loss of native vegetation and habitat through detailed design Safeguard BI02 has been developed. Safeguards have also been developed to minimise fragmentation of habitat corridors (Safeguards BI20, B22, and BI23). Where impacts are unavoidable, biodiversity offsets will be implemented through the Biodiversity Offset Scheme (BOS) and the *Policy and guidelines for fish habitat conservation and management Update 2013* (DPI (Fisheries NSW) 2013).

The BOS is a framework for offsetting unavoidable impacts on biodiversity from development and was established under the BC Act. Offsets may be delivered through a range of mechanisms, including securing offset properties under an appropriate legal instrument, purchasing and retiring biodiversity credits, paying into the Biodiversity Conservation Fund or progressing stewardship Site Agreements on suitable properties in accordance with the *Guideline for Biodiversity Offsets* (Roads and Maritime, 2016).

Offsets for impacts to Key Fish Habitat will be provided under the DPI (2013) which calculates habitat compensation on a minimum 2:1 basis. A greater compensation ratio may be considered if offsets cannot be sourced near the impact or are not of the same habitat type as that impacted.

2.6.9 Platypus

Submission number(s)

3, 14, 23, 31, 32, 35, 36, 37, 38, 39, 41, 43, 46, 47, 53, 54, 55, 56, 59, 60, 62, 63, 68, 74, 76, 78, 79, 80, 81, 84, 86, 87, 90, 91, 95, 96, 97, 100, 102, 103, 105, 107, 109, 112, 113, 114, 115, 116, 119, 120, 121, 123, 124, 127, 129, 131, 132, 133, 138, 142, 143, 145, 146, 163, 179

Issue description

Several respondents suggested there is a population of "critically endangered" platypus in the River Lett section of the proposal. The respondents suggest the proposal will disturb the environment over the construction period impacting the platypus. The respondents request an independent report be commissioned to assess the biodiversity impacts.

Response

Platypus are not listed as threatened under the BC Act or the EPBC Act, however, are protected under Schedule 5 of the BC Act as an aquatic mammal.

Transport has carried out an additional assessment of the potential impacts of the proposal on Platypus (*Ornithorhynchus anatinus*) due to a number of recent sightings of the species recorded by the community within the proposal area near River Lett, the findings of which are presented in Section 5.1 and Appendix B of this submissions report. As described in Section 5.1, Platypus have the potential to be indirectly impacted by a reduction in water quality from earthworks in the vicinity of River Lett and may also be directly impacted through disturbance to burrows. Safeguards to minimise impacts to Platypus have been included in Section 6.2 of this submissions report and include the development and implementation of soil and water management measures, establishment of no-go zones within retained habitat on the riverbanks and avoidance of works along the banks of the River Lett during Platypus breeding season.

The BDAR (refer to Appendix D of the REF) was prepared by appropriately qualified and experienced environmental professionals, ecologists and accredited people with their qualifications and experience documented in Table 1-1 of the BDAR. The BDAR was certified that the BDAR was prepared in accordance with the requirements of the BAM 2020 by Jane Rodd, Principal Ecologist (Arcadis) as an accredited person under Section 6.15 the BC Act. Similarly, the Addendum BDAR, including the field surveys the were conducted by appropriately qualified and experienced environmental professionals, ecologists and accredited people as demonstrated in Table 1-2 of Appendix B.

2.6.10 Water quality impacts

Submission number(s)

23, 89, 114, 120, 134, 145, 147

Issue description

Several respondents are concerned about the proposal's impacts on the water quality of the River Lett, which may endanger the biodiversity present. There is particular concern about the effects of siltation and pollution on the Platypus population present. One respondent believes there has been inadequate consideration of riparian species and the effects of sediment, flow events and water quality impacts.

Response

Potential water quality impacts to the River Lett associated with construction of the proposal described in Section 6.6.3 and Table 6-82 of the REF. These include increased turbidity from sedimentation, which can reduce visual amenity, and increased nutrients which can lead to algal blooms. Safeguards to manage these impacts include the development and implementation of a CSWMP (Safeguard SW01) and engagement of a soil conservation specialist (Safeguard SW02). These will be developed as design for the proposal is finalised and there is more certainty about potential impacts. The CSWMP will be subject to ongoing review, in accordance with the requirements of the Blue Book (Landcom, 2004) and will be amended in response to any observed changes to water quality in the River Lett or Coxs River as a result of water quality monitoring carried out in accordance with Safeguard SW04 in Section 6.2 of this submissions report.

During the operational phase of the proposal, the site will be completely stabilised, all roads and bridges will be sealed, cleared areas will be landscaped and scour protection will be installed. There will be no exposed topsoils and therefore little or no risk of soil erosion and subsequent transport of sediment into downstream waterways. Water quality controls, including vegetated swales and biofiltration basins, will be installed and operated so that the proposal will achieve NorBE (Safeguard SW05).

The BDAR (Appendix D of the REF) considered all species with the potential to be found within or in close proximity to the proposal, including riparian species. Safeguards to minimise impacts on riparian areas and protect water quality were included in the REF and are included in Section 6.2 of this submissions report, including implementation of soil and water management measures, water quality monitoring and adoption of the standard mitigation measures included in the *Policy and guidelines for fish habitat conservation and management Update 2013* (DPI, 2013). Detailed design of the proposal will aim to minimise changes to existing surface water flows (Safeguard BI19) and the proposal will be designed to have a NorBE on surface water quality, as required by the State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011. A further NorBE assessment will be carried out during detailed design to confirm that this will be achieved in accordance with Safeguard SW03.

Transport has carried out an additional assessment of the potential impacts of the proposal on Platypus (*Ornithorhynchus anatinus*) due to a number of recent sightings of the species recorded by community members within the proposal area near River Lett (Refer to Appendix B). While the Platypus is not listed as threatened under the BC Act or EPBC Act, they are protected in NSW under the BC Act. As such, Transport has included revised safeguards and management measures in Section 6.2 of this submissions report to specifically minimise impacts on the platypus population. Refer to Section 5.1 for a detailed response regarding impacts on Platypus.

Submission number (s)

23

Issue description

One respondent noted the REF has inadequately assessed impacts on various aquatic life and flora, particularly in relation to acid sulphate soils, soil erodibility and bulk earthworks across the river system.

Response

An Erosion and Sediment Control Plan (ESCP) will be prepared as a part of the CSWMP to mitigate erosion and sediment transport both within the construction footprint and offsite as per Safeguard SW01 in Section 6.2 of this submissions report. This will include erosion and sediment control plans for all progressive stages of construction and the implementation of erosion and sediment control measures including the use of sediment basins. A soil conservation specialist will also be engaged during construction of the proposal to provide advice on the implementation of erosion and sediment control (Safeguard SW02). As noted above, during the operational phase of the proposal, there will be no exposed topsoils and therefore little or no risk of soil erosion and subsequent transport of sediment into downstream waterways.

An Acid Sulfate Rock Management Plan (ASRMP) will also be prepared to provide information on the mitigation and management of acid sulfate rock disturbed as part of the construction works (Safeguard SW07).

2.6.11 Threatened ecological communities

Submission number(s)

12, 14, 23

Issue description

Three respondents noted that there are populations of old growth Yellow Box trees within the proposal footprint. The respondents are concerned the proposal will impact threatened Yellow Box bushland and requests that these are protected due to their cultural significance and as key habitat for several other species.

Response

The proposal's impact on threatened vegetation communities including the White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland was documented in Table 4-1 of the REF and has subsequently been updated in Section 5.1 and Appendix B of this submissions report. The proposal will result in the removal of about 75.89 hectares of native vegetation including the following protected plant community types:

- Around 19.02 hectares of Tablelands Basalt Forest in the Sydney Basin and South Eastern Highlands Bioregion, listed as Endangered under the BC Act
- Around 9.5 hectares of White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions, listed as Critically Endangered under the BC Act

- 4.5 hectares is consistent with White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland, listed as Critically Endangered under the EPBC Act.

Transport is required to offset impacts to biodiversity that cannot be avoided, minimised or mitigated in accordance with the requirements of the BC Act (see further discussion in Section 5.1). Biodiversity safeguards, as contained in Section 6.2 of this submissions report, will be implemented in accordance with Transport's Biodiversity Guidelines (RTA, 2011) to reduce any impacts due to the proposal.

It is acknowledged in the Aboriginal Cultural Heritage Assessment Report (ACHAR) (refer to Appendix G of the REF) that the yellow gum tree was traditionally used to create war spears and therefore has cultural significance. Safeguard AH04 notes that several interpretation elements have been considered for design integration to acknowledge the cultural values of the area including interpretive signage and plantings (refer to Section 6.2 of this submission report).

Submission number(s)

12

Issue description

The respondent requests that the proposal does not impact the yellow box trees and other vegetation that provides habitat to threatened species, such as Wedge Tail Eagles, rare goannas, rare mountain pygmy possums and Copper Winged Butterflies.

Response

Biodiversity impacts were considered through the corridor and route options assessment and the design refinement process (refer to Chapter 2 and Section 6.1.4 of the REF) with a view to avoid and minimise environmental impacts. Direct and indirect biodiversity impacts were avoided or minimised through:

- Selection of a route option with lower native vegetation clearing required
- Selection of a route option that largely follows the existing highway alignment and therefore has the least impact to habitat connectivity
- Siting of ancillary facilities in areas of cleared land where feasible
- Provision of a number of fauna crossings to provide fauna connectivity across the highway
- Provision of fauna fencing in selected areas of wildlife connectivity to reduce the risk of vehicle strike and fauna mortality as well as guide fauna towards fauna crossing structures
- Making provision for the demarcation, ecological restoration, rehabilitation and/or ongoing maintenance of retained native vegetation habitat within the construction footprint.

Several safeguards have been proposed to further reduce vegetation and habitat clearing through detailed design (see Safeguards BI02, BI03 and BI08) and to mitigate negative impacts on local biodiversity as outlined in Section 6.2 of this submissions report. Safeguard BI34 requires the installation of fauna fencing at targeted locations which will minimise vehicle strike of fauna and reduce the likelihood of species such as Wedge Tail Eagles foraging on the road.

Specific habitat features required for the Eastern Pygmy Possum (*Cercartetus nanus*) were not identified within the proposal area and impacts to the species are not predicted.

Specific safeguards have been included to minimise impacts to the Purple Coper Butterfly (see Safeguards BI11 and BI12). A Purple Copper Butterfly management plan will be developed within the Flora and Fauna Management Sub-plan which will include measures to minimise impacts to the species including consideration of construction activity timing/scheduling to minimise mortality in

areas of mapped habitat and a monitoring strategy to detect efficacy of management measures. These safeguards will ensure that any impacts to the Purple Copper Butterfly as a result of the proposal will be minimised.

Submission number(s)

115

Issue description

The respondent suggests the proposal will go through a Yellow Box conservation area of River Lett Hill. The respondent believes this area should be bypassed.

Response

As described in Section 5.1, and summarised above, a total of 75.89 hectares of native plant community types (PCTs) would require clearing for the proposal, of which of which 9.5 hectares meets the description of the TEC White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions, listed as critically endangered under the BC Act and 4.5 hectares meets the description of White Box - Yellow Box - Blakely's Red Gum Grassy Woodlands and Derived Native Grasslands as defined under the EPBC Act.

The proposal has sought to avoid and minimise impacts to native vegetation and threatened ecological communities through:

- Selection of a route option with lower native vegetation clearing required
- Selection of a route option that largely follows the existing highway alignment and therefore has the least impact to habitat connectivity
- Siting of ancillary facilities in areas of cleared land where feasible
- Making provision for the demarcation, ecological restoration, rehabilitation and/or ongoing maintenance of retained native vegetation habitat within the construction footprint.

As noted in Section 5.1, the proposal will not impact any conservation areas.

2.6.12 Weeds

Submission number(s)

12, 23, 53, 159

Issue description

Four respondents expressed concern over the control and maintenance of weeds.

Response

As noted in Section 6.1.3 of the REF, an increase in the movement of people, vehicles, machinery, vegetation waste and soil during and following construction of the proposal may facilitate the introduction or spread of exotic weeds. The Flora and Fauna Management Plan that is required to be prepared in accordance with Safeguard BI01 will include protocols to manage weeds and pathogens.

Weed species will be managed in accordance with *Guide 6: Weed management* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA, 2011) (refer to Safeguard BI25 in Section 6.2 of this submissions report), which includes requirements for weed management during construction and maintenance works on Transport projects.

2.7 Traffic and transport

2.7.1 Safety and efficiency

Submission number(s)

6, 67, 150

Issue description

Threee respondents acknowledge that the proposal will improve the traffic safety and efficiency, particularly at the River Lett. One respondent acknowledges the inclusion of rest areas and low gradient roads will improve road safety.

Response

Transport acknowledges the respondent's support for the proposal and associated safety features.

Submission number(s)

15, 23, 31, 49, 53, 55, 79, 80, 86, 90, 95, 96, 102, 107, 115, 124, 131, 132, 147

Issue description

Several respondents raised the following issues regarding road safety:

- There are a considerable number of accidents particularly on weekends and during holiday periods
- There has been no explanation regarding how the reduction of accidents by 60 per cent was calculated and questions whether the increase in the speed limit would reduce road deaths
- Requests for clarification of how Transport have determined the proposal would result in safety benefits
- Request for the design will include long merge, entry and exit lanes to ensure safe access and egress on the Great Western Highway and surrounding roads
- Query regarding whether Transport has assessed the cost of injuries against the travel time saved
- There have been no fatalities in the Valley for years and thus there is no need for the proposal.

Response

Reducing crashes is a key priority of the NSW Government and The Road Safety Plan 2021 (Transport for NSW, 2018) details the NSW Government's commitment to improving safety on NSW roads.

Crash reduction analysis was carried out on the Great Western Highway by comparing with and without proposal conditions to estimate potential crash reductions based on crash data recorded from 2014 to 2020 (refer to Section 2.9 of Appendix E of the REF).

The analysis suggests that with the implementation of the proposed safety measures, improved curves and gradients of the highway alignment, intersection upgrades with local roads, and provision of additional local access and service roads and the provision of a separate climbing lane on River Lett

Hill for heavy vehicles, the proposal would reduce the potential number of crashes on the Great Western Highway between Little Hartley and Lithgow by up to 57 per cent.

The number of crashes with the proposal were estimated using potential crash reduction rates attributable to the proposed Little Hartley to Lithgow upgrade. Crash reduction rates were determined using the Transport Crash Reduction Guide, August 2005. Further details of the assumptions of the crash reduction analysis can be found in Section 5.4 of Appendix E of the REF.

Traffic modelling of future year periods indicate the proposed upgrade would provide a safer, reliable and more efficient road corridor on the Great Western Highway between Little Hartley and Lithgow. The proposal has been designed to meet Australian Standards and Austroads guidelines. Transport does not carry out a cost analysis of injuries against travel time saved. When considering the entire Great Western Highway Upgrade Program as a whole, this will provide greater time saving and safety benefits for the region.

The proposal will reduce congestion and allow for vehicles to freely flow along the Great Western Highway. Section 6.2.3 of the REF compares the level of service of intersections along Great Western Highway with and without the proposal and shows that the proposal will significantly reduce delays at intersections resulting in a saving of up to 10 minutes for motorists travelling between Katoomba and Lithgow up to and past 2036. Traffic congestion on roads not only increases the fuel consumption but consequently leads to increase in carbon dioxide emissions, outdoor air pollution as well as increase in the exposure time of the passengers.

Traffic management plans and construction staging will be progressively developed during construction to facilitate safe and efficient movement of traffic through and around the proposal area (Safeguards TT01, TT02, and TT03 in Section 6.2 of this submissions report).

Submission number(s)

23

Issue description

The respondents stated the assertion of nearly one crash every week on the highway between Katoomba and Lithgow is incorrect, and that this number is closer to a third of this. The respondents suggested the proposal design should allow for safe movement through the Hartley Valley for residents, visitors and tourists.

Response

As provided in Section 2.2 and Appendix E of the REF, there were 89 crashes recorded between January 2014 and June 2020 (six-year period) on Great Western Highway between Little Hartley and Lithgow. This is equivalent to 0.27 crashes per week.

Traffic modelling of future year periods indicates that the proposed upgrade would provide safer, reliable and more efficient regional connections and links to and from destinations within the study area, surrounding Blue Mountains, Lithgow and Central West and Orana regions, and greater Sydney. Specifically, the proposal would improve conditions for pedestrians and cyclists by providing a range of improvements to the existing active transport network and facilities. Also, crash reduction analysis indicates that the proposal would reduce the potential number of crashes on the Great Western Highway between Little Hartley and Lithgow by up to 57 per cent.

The proposal has been designed to meet Australian Standards and Austroads guidelines, the key design criteria for the proposal are outlined in Table 3-1 of the REF. The proposed alignment would follow the general alignment and grade of the existing highway, however would diverge in places to

ease tightly curved sections. It also provides new junctions and retains sections of the existing highway as service roads to property accesses. Property access would be maintained throughout construction and operation of the proposal, although some access may be relocated or reinstated to tie into new road levels, as shown in Figure 3-1 of the REF.

Submission number(s)

90, 95, 96

Issue description

Several respondents state that Carroll Drive will be slow and dangerous due to the proposal. One respondent suggests that the proposed design for Carroll Drive is not ideal as residents will be forced to interact with large trucks, cars and caravans accessing the rest areas. Further, this respondent believes that roads near rest areas will be slow and possibly dangerous.

Response

The provision of the new Service Road 3 via Connecting Road 4 for eastbound traffic and Connecting Road 5 for westbound traffic allows for Mid Hartley Road and Carroll Drive intersections to remain in their current state. The proposal would not result in any changes to the intersection of Carroll Drive and the existing Great Western Highway.

2.7.2 Connectivity

Submission number(s)

23, 26, 31, 39, 40, 53, 55, 79, 82, 90, 91, 95, 96, 100, 102, 103, 105, 107, 109, 113, 119, 120, 124, 138, 145

Issue description

Several respondents raised the following issues regarding the proposal's impact on connectivity:

- Concerns regarding the connectivity of the upgraded roads for local residents
- The proposal will negatively impact connectivity between local residents on either side of the highway
- Residents along the Great Western Highway will now be unable to access their properties without a huge detour and will have to turn out into 100 kilometres per hour traffic
- The proposed overpasses and bridges will negatively impact connections between the north and south of the existing highway
- Travel through the Hartley Valley difficult and time consuming due to the proposal
- It will be difficult for residents to navigate out of their driveways and to either side of the Great Western Highway
- The proposal does not consider amenity for the community
- Concerns for access to the Great Western Highway at Hartley Historic Village or at Blackmans Creek and Jenolan Caves roads as entry and exits are kilometres apart. It is stated that these intersections currently connect directly onto the highway.

Response

The proposal would improve local access throughout the area and reduce the need to access the Great Western Highway for local travel through the creation of 10 new service roads as identified in Table 3-5 of the REF.

The proposal would provide a number of new bridges over the Great Western Highway ensuring connectivity between local residents on either side of the highway. New bridges would be provided at the existing Great Western Highway near Little Hartley, Coxs River Road, Baaners Lane, the existing Great Western Highway near Hartley and Jenolan Cave Road.

Property access would be maintained throughout construction and operation of the proposal, although some access may be relocated or reinstated to tie into new road levels, as shown in Figure 3-1 of the REF. Alternative access arrangements would be provided where the proposal would impact access to residential and commercial properties. Any unavoidable temporary access closures would only be carried out following appropriate planning and consultation with the property owners. The proposal will decrease travel time and congestion throughout the Hartley Valley. Acceleration lanes will provide a safe mode of overtaking slower moving heavy vehicles.

Local roads that would potentially experience some delays and changed traffic arrangements during construction include the Coxs River Road, Baaners Lane, Browns Gap Road, Carroll Drive, Mid Hartley Road, Kelly Street, Old Great Western Highway, Blackmans Creek Road, Jenolan Caves Road, Forty Bends Road, Mckanes Falls Road, Old Bathurst Road, Mudgee Street and Magpie Hollow Road. These roads would be directly linked to, or serviced by, the proposal and would experience temporary diversions and traffic switches before traffic is shifted to the revised permanent arrangement. These impacts would be minimised through the implementation of a Traffic Management Plan as discussed in Section 6.2 Traffic and transport. A new service road linking Jenolan Caves Road to the Old Great Western Highway at the entrance to the Hartley Historic Village would continue to provide access to properties and destinations in Hartley, although changes would be required to access routes and require motorists to travel additional distances to access properties and destinations.

The provision of service roads that connect to the upgraded highway will ensure that the proposal will decrease travel time throughout the Hartley Valley while improving safety through the separation of through traffic and local traffic.

Submission number(s)

7, 25, 101

Issue description

Several respondents suggest that the proposal will improve connectivity in Hartley Valley. One respondent requests that Hartley Historic Village remains accessible once the proposal is active. One respondent believes that the proposal design negatively impacts travel within the Hartley Valley area for residents and tourists.

Response

Transport acknowledges the respondent's support for the proposal. Once operational, the proposal would reduce travel times, increase safety for all users and improve trip reliability along the Great Western Highway. The proposal would have long term positive impacts on access and connectivity for local and regional communities, business, and industry. This will include access to Hartley Historic Village.

Reduction of through traffic through separation of highway and local roads, including heavy vehicles within the Little Hartley Village would support safer access and enhanced amenity for residents and businesses within the village.

Submission number(s)

23, 90, 91, 95, 96, 102, 114

Issue description

Several respondents raised the following issues regarding access for emergency services:

- The proposal will make access for emergency services incredibly dangerous, as vehicles will have to either turn across at marked emergency crossing areas into 100 kilometre per hour traffic, or having to backtrack over the overpass, then back towards their destination, adding several minutes to their travel time
- The design should ensure appropriate access for Emergency Services in all directions
- The proposal will severely adversely affect school bus transport especially during years of construction and will delays access to emergency services who will be caught up in roadworks.

Response

As noted above, the proposal would improve local access throughout the area and reduce the need to access the Great Western Highway for local travel through the creation of 10 new service roads as identified in Table 3-5 of the REF. The proposal would provide a number of new bridges over the Great Western Highway ensuring connectivity between local residents on either side of the highway and access for emergency services. New bridges would be provided at the existing Great Western Highway near Little Hartley, Coxs River Road, Baaners Lane, the existing Great Western Highway near Hartley and Jenolan Cave Road.

Once operational, the proposal would have long term positive impacts on access and connectivity for local and regional communities, business, and industry. Specifically, the proposal would support quicker, more reliable and safer regional connections and links to and from destinations within the study area, surrounding Blue Mountains, Lithgow and Central West and Orana regions, and greater Sydney. Upgrade of the existing highway to two lanes in each direction will allow for better traffic flow and enables traffic to continue moving in the case of an accident.

Transport has consulted with emergency services during the development of the REF and would continue to consult with emergency services prior to and during construction to confirm any diversions and any operational road network changes as per environmental Safeguard TT05 in Section 6.2 of this submissions report.

As per Safeguard SE05, access for emergency vehicles will be maintained at all times during construction. Any site-specific requirements will be determined in consultation with the relevant emergency services agency (eg for South Bowenfels Rural Fire Brigade and Lithgow Hospital).

In the event of a fire, emergency services will be able to gain access via the existing Great Western Highway or tracks used for construction activities. Access and egress to/from private properties in bushfire prone areas adjoining the construction corridor will be maintained, with advice on any access changes provided to RFS in advance of the bushfire season (Safeguard BF01).

Submission number(s)

160

Issue description

The respondent suggests removing as many intersections from the Great Western Highway as possible.

Response

The proposed upgrade would improve safety by separating carriageways, and provide safer, controlled access onto the highway. Provision of service roads, where feasible and reasonable, would minimise direct access to the Great Western Highway from adjacent properties.

There are 12 local road intersections that would require modification or tie-in to the proposal, including Coxs River Road, Baaners Lane, Browns Gap Road, Carroll Drive, Old Great Western Highway, Kelly Street, Jenolan Caves Road, Blackmans Creek Road, Forty Bends Road, McKanes Falls Road, Old Bathurst Road and Mudgee Street. The proposal would require the construction, upgrade and/or adjustment of local road, service road and connecting road intersections, as summarised in Table 3-4 of the REF. Some of these upgrades involve adjusting intersections to become left turn only intersections for safety reasons. Additionally, other intersections will be made grade separated to ensure through traffic is not affected.

Where existing at-grade intersections at local roads will remain, these will be upgraded and/or adjusted to accommodate the realignment of the Great Western Highway. Road safety audits are carried out at each design stage and will also be carried out post-construction.

Submission number(s)

10, 13

Issue description

One respondent notes an increase in traffic as a result of new subdivisions in the area, and suggests Mudgee Street needs upgrading to manage the increased use. One respondent suggests that including only one access point from the highway onto Mudgee Street and removing current access from the highway will control traffic access and greatly improve safety.

Response

Further improvements to the proposal design and opportunities to improve safety will be considered during detailed design.

The upgrade of Mudgee Street is outside the scope of this proposal.

2.7.3 Baaners Lane

Submission number(s)

4, 23, 53, 59, 60, 74, 90, 91, 95, 96, 97, 102, 120, 131, 132, 151

Issue description

Several respondents raised issues regarding road safety at Baaners Lane:

- Concerns about road safety for right turning vehicles at Banners Lane intersection. In particular, the respondents expressed concern regarding visibility during the night and fog conditions and during high volumes of traffic
- The seagull intersection proposed does not provide adequate safety
- Baaners Lane will be dangerous for vehicles travelling at high speeds, particularly for vehicles towing large trailers or horse floats
- Baaners Lane will become more dangerous to merge onto the Great Western Highway.

Response

The proposal has been designed to provide efficient, free flowing traffic conditions with capacity to safely accommodate forecast traffic volumes. The proposal design incorporates all feasible and reasonable traffic safety measures including those related to geometry, pavement, lighting and signage consistent with current Australian Standards, road design guidelines and industry best practice. In doing so, the design of the proposal inherently minimises the likelihood of incidents and accidents.

Safety audits have been carried out during design development and will also be carried out post-construction. One of the outcomes is the provision of safety barriers, where required, to improve safety for both left and right turns. These will be incorporated during detailed design.

The proposal will provide the opportunity to reduce crashes, as it will improve the design of the Great Western Highway through improved curves and gradients of the highway alignment, intersection upgrades with local roads, and provision of additional local access and service roads. The design provides for two lanes in each direction, with an additional climbing lane on River Lett Hill to separate slower trucks and other vehicles and allow for safer overtaking. While it is acknowledged that the proposal will result in changes to entry and exit points, overall, it will improve network performance and provide more flexibility and options to road users. Additionally, there will be options to join the highway via local service roads.

Submission number(s)

37, 60, 74, 95, 96, 102

Issue description

Several respondents raised the following issues regarding Baaners Lane and Coxs River Road:

- The proposed design would make access for local traffic from Coxs River Road and Baaners Lane more complex
- Baaners Lane should be accessed via Coxs River Road exit and a service road
- The proposed design for Coxs River Road could be simplified and suggests that the current design complicates access to businesses in that location. Respondents believe this will

encourage motorists to bypass these businesses to go to Lithgow and Mt Victoria, which will potentially reduce the population in Hartley Valley and negatively impact businesses

- Construction will cause delays and inconvenience at Coxs Road.

Response

The proposed changes to access for local residents using Coxs River Road and Baaners Lane are to improve safety and avoid the need to use the new Great Western Highway for local trips. Access from Coxs River Road to Baaners Lane would be direct via the new Great Western Highway. Transport acknowledges that the proposed access from Baaners Lane to Coxs River Road adds complexity compared to the existing condition and would involve a right turn onto the new Great Western Highway left onto Connecting Road 3, right on to Service Road 2 (existing Great Western Highway) and then right onto Coxs River Road.

An additional service road connecting Baaners Lane with Coxs River Road was investigated. It would significantly increase the footprint of the highway as well require significant acquisition from adjoining landowners along with impacting the airstrip. The provision of the existing highway as a service road is an important component of the design separating the local and tourist traffic from through traffic. The service road in Hartley will be connected to the existing highway at Victoria Pass to provide a continuous local link for local traffic. Safe connections from the new highway to the new service road have been provided which also provide for access to local businesses. Service signposting are included in the design to inform motorists of nearby businesses off the new highway.

A Traffic Management Plan will be prepared for the construction phase of the proposal as outlined in Safeguard TT01 of Section 6.2 of this submissions report. This will adhere to Traffic Control at Worksites, Technical Manual, Issue No. 6 (Transport for NSW, 2020) and QA Specification G10 Traffic Management. This will include details on:

- Measures to maintain access to properties and local roads
- Site specific traffic control measures to manage and regulate traffic movement
- Requirement and methods to consult and inform the local community of impacts on the local road network
- Measures to maintain pedestrian and cyclist access
- Access to ancillary sites including entry and exit locations and measures to prevent construction vehicles queuing on public roads
- A response plan for any construction road traffic incident
- Consideration of other developments which 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.

Opportunities to refine intersections to improve access would be considered during the detailed design phase of the proposal.

Submission number(s)

74

Issue description

One respondent raised concerns about loss of direct access between Baaners Lane and Browns Gap Road. Further, the respondent is concerned about the difficulty in turning onto Browns Gap Road.

Response

As identified in Section 2.4.2 of the REF, it is acknowledged that residents of Baaners Lane would be required to travel further in order to access Browns Gap Road. Connectivity between Baaners Lane and Browns Gap Road and the location of the Baaners Lane and Great Western Highway intersection was raised as a key concern in the community feedback received by Transport in previous phases of the proposal. As such, a review was carried out at a workshop held in March 2021 between Transport and its consultants to investigate alternative options around this connection. The options reviewed at the value management workshop were:

- Option 1: Right Turns in and out of Baaners Lane across the Great Western Highway (at grade intersection). Residents along Baaners Lane travelling to Browns Gap Road will need to travel via Great Western Highway.
- Option 2: Bridge across the Great Western Highway and staggered T-intersection with grade separation.
- Option 3: New service road along Great Western Highway for connection to Coxs River Road (at grade intersection).

A paired comparison and option assessment was carried out during the workshop which resulted in both Option 1 and Option 2 having merit, and that further consultation with the community would be required.

The options assessment followed the criteria listed below:

- Maximises safety of intersections and reduces local traffic interactions with high speed environment
- Minimises local travel time for local traffic to and from Lithgow
- Minimises requirements for additional property acquisitions
- Minimises impacts on adjacent residences (proximity, noise etc)
- Minimises impact on rural character
- Reduces need for imported fill
- Minimises duration of construction (disruption to community).

Transport met with the Hartley District Progress Association in March 2021. Based on feedback from this meeting, it was determined that Option 1 would be developed in the concept design.

Submission number(s)

74

Issue description

The respondent raises concerns about the use of Baaners Lane for non-local traffic.

Response

The proposed vehicle turning facility on Baaners Lane would generally cater to local traffic whilst the Great Western Highway will cater to through traffic.

Submission number(s)

151

Issue description

The respondent identifies an increase in local traffic due to increase in residences in Baaners Lane.

Response

Transport acknowledges the increase in traffic in Baaners Lane.

2.7.4 Active transport

Submission number(s)

9, 13, 23, 102, 109, 113, 119, 140

Issue description

Several respondents raised issues regarding active transport:

- Requests for active transport to be included through the Hartley Valley as a part of the proposal
- The construction of a four-lane highway will prohibit safe pedestrian access between South Bowenfels and Lithgow
- Request that provisions be made for modes of active transport along the southern side of the new road
- The use of the existing highway bridge to maintain off-traffic to Jenolan Caves does not provide for pedestrian or cycling needs
- One respondent notes that there is currently a narrow path that passes through the intersection of Mudgee Street and Old Bathurst Road. The respondent suggests this could be utilised however it requires an upgrade to be serviceable in all weather conditions.

Response

The proposal would improve conditions for pedestrians and cyclists by providing a range of improvements to the existing active transport network and facilities by providing:

- A 2.5 metre nearside sealed shoulder has been provided on Great Western Highway. It is anticipated that the sealed shoulders are sufficient to accommodate on road cyclists on both sides of each carriageway of Great Western Highway
- A two metre nearside sealed shoulder has been provided on Service Road 2 and Coxs River Road for on road cyclists
- A two metre nearside sealed shoulder has been provided on Service Roads 1 and 3 for on road cyclists.

Design development has considered the future development of shared paths in the vicinity of the proposal. The alignment and structure of the future shared paths would be developed and finalised during future design development and in consultation with Lithgow City Council and other relevant stakeholders.

Submission number(s)

140

Issue description

The respondent notes that as well as dealing directly with proposals for active transport in the REF, this submission must address the issue of how cyclists connect to or from Mt Victoria (even though that issue is directly relevant to the Central Section EIS). It is stated that this is because any proposed active transport routes set out in the West REF must form part of connected networks even if the development of those networks are to be staged over a number of budget cycles. The respondent notes that, without addressing the broader connectivity question, the active transport proposals in the REF, make little sense.

Response

Active transport links associated with the Central Section are currently being considered and would be made public during the exhibition of Central Section EIS.

Submission number(s)

140

Issue description

The respondent recommends signage for on-highway and off-highway cyclists and regional tourism mapping display boards.

Response

Transport will provide clear roadside signage would be provided prior to the last exit before the tunnel for eastward bound cyclists on Great Western Highway. Signage will be provided for all exits and historical areas as a part of the Urban Design Plan developed for the proposal.

Submission number(s)

140

Issue description

The respondent notes that it is unclear from Appendix R of the REF whether the shared path will be separate to the traffic through the use of service roads, and states that having a separate path for cyclists will improve participation in active transport. The respondent requests for road surfaces to be sealed and smooth and gradients to be consistent.

Response

The shared path shown in Appendix R is indicative only and specific design aspects would be further considered during detailed design. Transport is currently working in collaboration with Lithgow City Council and other stakeholders to negotiate an active transport friendly design. The design currently involves large shoulders in sections to account for cyclists.

Submission number(s)

140

Issue description

The respondent states that Browns Gap Road is proposed to have an 80-kilometre speed limit and has no safe shoulders for cyclists. The respondent recommends that Transport consults with Lithgow City Council about creating a safe shoulder or path for cyclists on Browns Gap Road.

Response

Upgrades to Browns Gap Road are beyond the scope of this proposal.

Submission number(s)

140

Issue description

The respondents submitted several figures regarding plans for active transport for Transport's review.

Response

The attachments provided the respondent will be considered further during detailed design.

2.7.5 Parking

Submission number(s)

13

Issue description

The respondent requests marked parking be included in front of the Presbyterian Church.

Response

Provision of marked parking in front of the Bowenfels Presbyterian Church would be considered as part of detailed design in consultation with the representatives of the church.

2.7.6 Traffic volumes

Submission number(s)

29, 74, 131, 132, 147

Issue description

Several respondents are concerned about the potential increase in traffic congestion at the bottom of Mount Victoria pass due to the design of the proposal. The respondent suggests an eastbound pinch point at the bottom of the Victoria pass will be created as a result of two lanes merging into one. One respondent suggests conducting traffic surveys at the existing Great Western Highway prior to Victoria Pass.

Response

The proposal forms part of the broader Greater Western Highway Upgrade Program that aims to reduce congestion and deliver safer, more efficient and reliable journeys for those travelling in, around and through the Blue Mountains, while also better connecting communities in the Central West to Sydney. At the completion of works, this proposal, the West Section, would connect to the Central Section which involves the construction of a tunnel bypass of Blackheath and Mount Victoria. Eastbound traffic travelling along Great Western Highway would travel into the tunnel, avoiding any congestion at the bottom of Mount Victoria pass. Any congestion experienced once the West Section is complete but prior to the Central Section being complete would be temporary and managed using traffic controls.

Submission number(s)

23, 32, 37, 38, 49, 76, 89, 91, 128, 131, 132, 155, 156, 177, 180

Issue description

Several respondents note that the driving time between townships is currently reasonable. In summary, respondents raised the following issues regarding congestion:

- There are no congestion problems in Harley Valley and thus, there is no need for the proposal
- Traffic occurs primarily at Blackheath not in Hartley Valley
- Doubts surrounding the performance rating of the current highway
- Future increases in traffic volumes will not lead to congestion
- Upgrading the highway will result in more congestion
- Requests for evidence of a reduction in traffic congestion as a result of the proposal.

Response

A traffic and transport impact assessment (Appendix E) was carried out for the proposal and is summarised in section 6.2 of the REF. The assessment included a review of the existing road network performance as well as modelling future conditions with and without the proposal.

Traffic growth is expected on the Great Western Highway through the proposal area. Without the proposal, the performance of the Great Western Highway is expected to deteriorate over the next fifteen years and would approach operational capacity. Motorists travelling along Great Western

Highway would experience congestion with little opportunities to overtake. Intersections would perform at levels below satisfaction resulting in delays.

The proposal would increase the capacity of the Great Western Highway which would reduce congestion and improve intersection performance. The proposal would increase the number of lanes on Great Western Highway allowing traffic to flow smoothly, increasing reliability, network performance and safety. This would lead to reduced travel time for motorists travelling along Great Western Highway. The proposal would have substantial benefits during weekend and holiday periods where there are increased traffic volumes.

Section 6.2.3 of the REF compares the level of service of intersections along Great Western Highway with and without the proposal and shows that the proposal will significantly reduce delays at intersections resulting in a saving of up to 10 minutes for motorists travelling between Katoomba and Lithgow by 2036.

As identified in Section 2.10 of Appendix E of the REF, traffic surveys on Great Western Highway within the proposal area were carried out in March 2021. The traffic survey included:

- Midblock traffic counts collected using automatic tube counters (ATC)
- Intersection turning movement counts during critical peak periods
- Origin-destination (OD) surveys between Browns Gap Road and Banners Lane.

Submission number(s)

23, 131, 132

Issue description

Several respondents suggested that the period of traffic monitoring was over the Easter long weekend and during a period where Bells Line of Road was closed, and suggested these factors would have inflated traffic volumes.

One respondent stated the recent high traffic volumes on the highway in March and June 2021 were unique and caused by road closures and NSW COVID-19 holiday travel.

Response

Midblock traffic counts were conducted on the Great Western Highway during the two weeks period between 17 March and 31 March 2021, outside of school holidays. Intersection turning movement counts were conducted on Friday 18 March 2021 during the AM peak (6am to 10am) and PM peak (2pm to 6pm) periods and on Sunday 21 March 2021 during the peak period (10am to 4pm) at 14 intersections on the Great Western Highway (refer to Appendix E of the REF). The Easter long weekend in 2021 fell between 2 April and 5 April.

Midblock traffic counts were carried out over two weeks to account for any variability in traffic volumes, including the temporary closure of Bells Line of Road at Richmond on 20 March 2022 and Mount Tomah between 27 March and 2 April 2022.

Submission number(s)

157

Issue description

The respondent suggests future proofing the proposal to accommodate for future population growth and vehicle movements.

Response

Traffic modelling in Section 6.2 of the REF indicates that traffic movement will increase along the Great Western Highway between Little Hartley and Lithgow for future years 2026 and 2036. To accommodate the projected increase in traffic, the proposal includes the upgrade of the existing highway to a four-lane divided highway. Traffic modelling showed a high level of service for traffic volumes in 2036, and the proposal would reduce travel time by up to 10 minutes between Katoomba and Lithgow from about 40 minutes in the base case/'do nothing' scenario to around 29 minutes with the proposal. Travel time saving will be most significant during holiday and weekend periods. Refer to Section 3 of the REF for further details on proposal design.

2.7.7 Heavy vehicles

Submission number(s)

47, 127

Issue description

Two respondents raised the following issues:

- There is currently too much traffic using the Great Western Highway through the Blue Mountains
- Trucks driving at high speeds will cause road accidents
- The proposal will encourage heavy freight transport instead via rail, making the highway more dangerous.

Response

Concerns regarding trucks travelling at high speeds are acknowledged, however drivers using the road network would be required to follow driving rules and regulations, including travelling at or below the posted speed limit and following regulatory signage and pavement markings.

Traffic volume data, recorded on the Great Western Highway between Little Hartley and Lithgow, shows that between 1,900 and 2,400 heavy vehicles travelled along the road corridor on an average weekday in 2021, which equates to a respective 18 to 22 per cent of total traffic during the 24-hour period. Additionally, the proposal is anticipated to increase safety and reduce crashes on the Great Western Highway by 57 per cent.

The forecasted increase in heavy vehicle use was assessed on a conservative basis. There is future opportunities to reduce heavy vehicle usage as the upgrade will enable larger heavy vehicles to utilize the road which may reduce the number of heavy vehicles due to increased capacity. As noted in Section 2.2.3, the proposal is justified by the limitations of the existing Great Western Highway infrastructure. Traffic growth is expected on the Great Western Highway through the proposal area.

Without the proposal, the performance of the Great Western Highway is expected to deteriorate over the next fifteen years and would approach operational capacity. This would cause congestion along the Great Western Highway and delays at intersection. The proposal will allow for a reduction in congestion in the Lithgow to Hartley area and improve the transport infrastructure for future traffic demands.

Construction of a separate rail freight line is beyond the scope of this proposal.

Submission number(s)

15

Issue description

The respondent notes there are frequent heavy vehicle breakdowns on the narrow/steep sections of the highway.

Response

Transport acknowledges the existing congestion issues that can be caused by heavy vehicles breaking down during steep sections of the road such as between River Lett Hill and Forty Bends. As such the proposal design provides for two lanes in each direction, with an additional climbing lane on River Lett Hill to separate slower trucks and other vehicles and allow for safer overtaking. The proposal design aims to reduce the gradients of the existing highway, which should reduce the number of heavy vehicle breakdowns.

Submission number(s)

23, 109, 119, 129, 142

Issue description

Several respondents request clarification on whether the traffic growth rate is 0.4 per cent or 2 per cent for heavy vehicles. The respondents note that the growth rate of 0.4 per cent is negligible, and thus, with the use of enhanced vehicles B-doubles, triples and road trains, the heavy vehicle figures should significantly reduce.

One respondent states that the REF contradicts itself by noting heavy vehicle numbers will decrease using High Performance Vehicles although overall heavy vehicle numbers will increase.

Response

As identified in section 4.1 of Appendix E, without the proposal, between 2016 and 2036, daily traffic volumes on the Great Western Highway between Little Hartley and Lithgow are predicted to grow by 0.4 per cent per annum for light vehicles and about 1.3 per cent per annum for heavy vehicles.

As identified in Section 5.1, a more conservative assumption of two per cent traffic growth was used to assess the potential performance of the proposal. The high rate was used for the proposal to account for an increase in the number of road users due to the better performance of the proposal compared with the existing Great Western Highway. Notwithstanding this, there is still the possibility to reduce freight with the use of B-doubles in the future.

Submission number(s)

23, 107, 127, 143

Issue description

Several respondents raised the following issues:

- Concerns the proposal will allow for more heavy vehicle traffic, including A-double and B-double trucks, on the Great Western Highway
- Concerns increase in heavy vehicle traffic will affect safety, particularly with the variability of climatic factors within the area
- The argument that long vehicles are safer and can carry more load is only a theory
- The road corridor through the Blue Mountains is not designed to cater for heavy vehicles.

Response

The Great Western Highway is currently restricted to general access vehicles only which includes 19 metre long B-double heavy vehicles. Traffic volume data, recorded on the Great Western Highway between Little Hartley and Lithgow, shows that between 1,900 and 2,400 heavy vehicles travelled along the road corridor on an average weekday in 2021, which equates to a respective 18 to 22 per cent of total traffic during the 24-hour period.

While the new Great Western Highway would allow B-double trucks greater than 19 metres long, the proposal design incorporates all feasible and reasonable traffic safety measures including those related to geometry, pavement, lighting and signage consistent with current Australian Standards, road design guidelines and industry best practice. In doing so, the design of the proposal inherently minimises the likelihood of incidents and accidents. The proposal would provide the opportunity to reduce crashes, as it would improve the design of the Great Western Highway through improved curves and gradients of the highway alignment, intersection upgrades with local roads, and provision of additional local access and service roads. The design provides for two lanes in each direction, with an additional climbing lane on River Lett Hill to separate slower trucks and other vehicles and allow for safer overtaking. The design elements of the proposal would improve network performance and reduce congestion, particularly during holiday and weekend periods.

Submission number(s)

151

Issue description

The respondent suggests truck freight companies may have something to do with the Great Western Highway Upgrade Program.

Response

Transport acknowledged that one of the objectives of the proposal is to improve the efficiency and safety of freight movements through the Blue Mountains to better link the Central West and Orana region economies with domestic and international markets. However, the proposal provides a number of other benefits such as improving travel times and road safety, reduce crashes and increase connectivity for local communities and visitors to the area.

Submission number(s)

155

Issue description

The respondent does not consider the proposal a benefit to truck drivers due to the ascent and descent into Hartley Valley.

Response

The Great Western Highway suffers from constraints that limit freight movement, particularly for longer vehicles. The proposal would increase capacity and support the mass transit system while enhancing accessibility and improving road safety. The proposal would result in reduced grades, particularly on River Lett Hill, which would improve the ascent and descent of heavy vehicles travelling along Great Western Highway.

2.7.8 Public transport

Submission number(s)

23

Issue description

The respondent requested bus stops to be adequately considered, in particular the bus stop at Ambermere Drive.

Response

As identified in section 5.5.1 of Appendix E, there is one existing bus stop within the proposal area located at the northern corner of the existing Great Western Highway and Ambermere Drive intersection. The bus stop is proposed to be maintained. A few informal school bus stops are located in the proposal area, which will be reviewed at the detailed design phase.

2.7.9 Road classification

Submission number(s)

23

Issue description

The respondent states that Transport's consideration of the Great Western Highway though the Hartley Valley as a rural road is not appropriate.

Response

Transport classifies the Great Western Highway as a State road and a major arterial highway carrying local, intra-regional and inter-regional travel and pursuant to the Roads Act 1993 is considered a classified road.

2.7.10 Speed cameras

Submission number(s)

4, 131, 132

Issue description

Two respondents request a speed camera to be installed between Coxs River Road and Baaners Lane. One respondent requests a speed camera to be installed between Hartley Valley to Magpie Hollow Road.

Response

The need for speed cameras is determined by the Centre for Road Safety and involves consultation with traffic police, and road operations organisation once a section of roadway has been identified as having a poor safety records. Speed cameras are not normally installed on newly constructed sections of road. Currently in NSW the only speed cameras operating on rural highways are point to point cameras which only deal with heavy vehicles.

2.7.11 Speed limits

Submission number(s)

4, 12, 13, 17, 23, 35, 46, 53, 54, 55, 56, 59, 60, 62, 65, 74, 76, 79, 86, 89, 90, 95, 96, 104, 106, 107, 108, 109, 114, 115, 116, 119, 131, 132, 133, 137, 142, 145, 147, 151, 152, 160

Issue description

Several respondents raised the following issues regarding speed limits:

- The increase in speed limit to 100 kilometres per hour is unjustified
- Requests for the speed limit to remain at 80 kilometres per hour throughout the Hartley Valley to retain consistency
- The proposed speed limit is unsafe, unnecessary, and not suited to the residential area
- The speed limit of 100 kilometres per hour is inappropriate since the design has several turns and curves where sight lines are reduced
- Request for a 90-kilometre speed limit at Forty Bends
- Request for a speed limit of 70 kilometres per hour on River Lett Hill eastbound.
- Alternatives for the speed limits have not been assessed
- The speed environment down River Lett Hill has not been properly considered given that the current heavy vehicle speed limit is 40 kilometres per hour and the proposed new grade is not significantly different.

Response

The proposed speed limit of the proposal varies between 80 and 100 kilometres per hour and is considered suitable based on the proposed design. The speed limit would ensure efficient free flowing traffic while minimising potential safety risks due to the adoption of feasible and reasonable traffic safety measures including those related to geometry, pavement, lighting and signage consistent with

current Australian Standards, road design guidelines and industry best practice. The proposal design will reduce the areas of steep grades and bends which will greatly improve the safety and efficiency of the road network.

Submission number(s)

137, 165

Issue description

The respondents request speed reduction at Browns Gap Road from 80 kilometres per hour to 60 kilometres per hour. One respondent question whether changing speed limits on adjacent streets (eg Coxs River Road, Baaners Lane and Browns Gap Road) to 50-60 kilometres per hour was within the proposed works.

Response

The change in speed limits in local roads is within Lithgow Council's jurisdiction. The reduction of speed limits for existing roads is beyond the scope of this proposal.

2.7.12 Tie-in to the Central section

Submission number(s)

109, 119

Issue description

Two respondents state that the proposal is a part of the Great Western Highway Upgrade Program and thus, the proposal itself cannot achieve its objectives nor achieve any benefit. The respondents state that the proposal is not connected to the Great Western Highway at its eastern end, suspecting that it will connect to the proposed tunnels in the future.

Response

Transport proposes to upgrade the Great Western Highway between Little Hartley and Lithgow, NSW (the proposal). The proposal forms part of the broader Greater Western Highway Upgrade Program that aims to reduce congestion and deliver safer, more efficient and reliable journeys for those travelling in, around and through the Blue Mountains, while also better connecting communities in the Central West to Sydney. The Great Western Highway Upgrade Program is packaged into separate East, Central and West Sections.

While this proposal forms part of a larger package of works, as a standalone proposal, it would deliver numerous benefits including improving network performance, safety, and resilience on the highway between Little Hartley and Lithgow, and as a result, drive economic development and productivity particularly for the Central West. The proposal is also intended to either maintain or improve the urban and rural amenity for townships along the route, which is constrained by the current performance of the Great Western Highway.

The proposal would increase the capacity of the Great Western Highway between Little Hartley and Lithgow, reduce congestion and improve intersection performance. Increasing the number of lanes on the highway would allow traffic to flow smoothly and reduce travel time for motorists. This would lead to reduced travel time for motorists travelling along Great Western Highway. When considered with

other upgrades to the Great Western Highway planned between Katoomba and Lithgow, it is expected that motorists would experience a reduction in travel time of up to 10 minutes with large benefits anticipated during holiday and weekend periods.

As identified in section 3.2.2 of the REF, there are multiple tie-ins along the alignment, including tie-ins to the existing highway, in particular at the eastern extent of the proposal adjoining future highway upgrades that are subject to separate environmental assessment and approval. The proposal would also tie in to existing local road intersections. There are 12 local road intersections that would require modification or tie-in to the proposal, including Coxs River Road, Baaners Lane, Browns Gap Road, Carroll Drive, Old Great Western Highway, Kelly Street, Jenolan Caves Road, Blackmans Creek Road, Forty Bends Road, McKanes Falls Road, Old Bathurst Road and Mudgee Street.

2.8 Noise and vibration

2.8.1 Assessment

Submission number (s)

9

Issue description

The respondents expressed concern that noise modelling did not consider the second story of their house.

Response

All floors are modelled separately where buildings are identified as having multiple stories (ie using aerial imagery, street view and LIDAR). Transport does recognise that the process is not perfect and occasionally the number of floors is identified incorrectly. However, any errors related this will be corrected during detailed design.

Submission number (s)

101

Issue description

The respondent requests for noise and vibration assessments to be conducted prior to and after, construction.

Response

Noise monitoring was carried out to inform the technical working paper: Noise and vibration (Appendix F of the REF). Unattended noise monitoring was completed in the construction footprint between March and May 2021 and the measured existing noise levels were determined to be representative of the background noise levels at receivers that would likely be most affected by the construction and operation of the proposal in each noise catchment area (NCA). A commitment has been made by Transport to carry out additional noise monitoring during the detailed design phase, which will be carried out to confirm background levels prior to construction.

As per environmental safeguard NV02 in Section 6.2 of this submissions report, location and activity specific noise and vibration impact assessments will be carried out prior to construction activities:

- With the potential to result in noise levels above 75 dBA at any receiver
- Required outside Standard Construction Hours likely to result in noise levels in greater than the relevant Noise Management Levels
- With the potential to exceed relevant criteria for vibration.

The assessments will confirm the predicted impacts at the relevant receivers in the vicinity of the activities to aid the selection of appropriate management measures, consistent with the requirements of the CNVG. Vibration monitoring will be carried out at the start of noise and/or vibration intensive activities to confirm that actual levels are consistent with the predictions and that appropriate mitigation measures from the CNVG have been implemented (Safeguard NV05).

Further noise monitoring will be carried out once the proposal is operational to validate the post-construction noise model, in accordance with the RTA Environmental Noise Management Practice Note 8. In the circumstance that the validation of the model indicates additional receivers are eligible to receive consideration of noise mitigation measures, these will be addressed in accordance with the process outlined in Safeguard NV13.

Submission number (s)

10, 53, 97, 110, 113

Issue description

Several respondents request for noise monitoring to be carried out to attain existing noise levels experienced.

Response

Long term unattended noise monitoring was completed in the construction footprint between March and May 2021 to establish the pre-existing noise levels representative of background noise levels at receivers that will likely be most affected by the proposal. Traffic volumes during the monitoring period are considered to be representative of normal conditions and were not adversely affected by COVID-19. Monitoring will continue during the design phase and post construction.

Submission number (s)

23, 109, 119, 142

Issue description

Several respondents state that background noise readings were taken during March to May 2021 and the effects of the COVID-19 pandemic on transport makeup and noise were not taken into account. One respondent believes that the noise assessment should be supported by a comparison of traffic figures and heavy vehicle counts.

Response

As stated in Section 2.2 of Appendix F of the REF, traffic volumes during the noise monitoring period are considered to be representative of normal conditions and were not adversely affected by COVID-19, noting that a lock-down was not in place during the monitoring period. As noted above, a commitment has been made by Transport to carry out additional noise monitoring during the detailed design phase, which will be carried out to confirm background levels prior to construction.

2.8.2 Blasting

Submission number (s)

10, 23, 35, 38, 46, 53, 54, 55, 58, 69, 76, 79, 80, 86, 87, 90, 91, 95, 96, 100, 102, 103, 105, 109, 113, 138, 147

Issue description

Several respondents expressed concern regarding noise and vibration impact from blasting on:

- Residents
- Biodiversity
- Aboriginal and non-Aboriginal heritage sites, and in particular:
- Heritage buildings on Mudgee Street
- Hartley Historic Site.

One respondent was concerned about the proposed blasting, recounting that DMR worked on the Hartley cutting circa 1970 and the front windows of Bungarribee, 17 Old Bathurst Road Hartley, were blown out due to vibration impacts.

Response

Transport acknowledges that construction of the deep cut through River Lett Hill will require a significant amount of blasting to remove the large volume of hard rock (refer to Section 6.3 of the REF). Blasting is proposed to occur along River Lett Hill to Forty Bends section of the proposal. Figure 6-12 of the REF shows the extent of predicted blasting impacts for the proposal.

Impacts to residents: The impacts of blasting are assessed in Section 6.3 and Appendix F of the REF with the assessment being carried out in accordance with AS2187.2:2006 *Explosives – Storage and use Part 2: Use of explosives*. Transport acknowledges that 27 buildings are within 170 metres of the proposed blasting location and have the potential to be impacted by structural damage and human comfort associated with blasting (refer to Figure 6-12 of the REF). Impacts to biodiversity: Section 6.1 and Appendix D of the REF summarises the proposal's impacts on biodiversity. While the construction phase of the proposal may cause temporary disturbance, the impact of noise and vibration on fauna would likely be localised to the construction footprint and would be unlikely to have a significant, long-term impact on fauna.

- Impacts to non-Aboriginal heritage: It is acknowledged that thirteen non-Aboriginal heritage items or areas are within 340 metres of the proposed blasting location. Heritage listed buildings and structures will be considered on a case-by-case basis in accordance with BS 7385 Evaluation and Measurement for Vibration In Buildings – Guide To Damage Levels From Ground Borne Vibration, and would be only be assumed to be more sensitive to vibration if assessed as structurally unsound
- Impacts to Aboriginal heritage: As summarised in Section 6.2 of this submissions report, recommendations for the management of potential impacts to Aboriginal heritage have been developed in consultation with RAPs to avoid impacts where possible and where impacts are unavoidable, to effectively mitigate them. Management of Aboriginal sites will include protection and salvage measures (Safeguards AH07, AH08 and AH09), and procedures for unexpected discovery of Aboriginal objects (Safeguard AH10). As per Safeguard AH06 in Section 6.2 of this submissions report, temporary fencing will be placed on the boundary of listed Aboriginal heritage sites to mitigate construction impacts (see Table 6-62 of the REF).

Site specific management measures will be described in an AHMP that will form part of the CEMP developed for the proposal (Safeguard AH01)

- Impacts to buildings on Mudgee Street: Figure 6-12 of the REF shows the extent of predicted blasting impacts for the proposal which shows that blasting impacts are not predicted at any buildings on Mudgee Street.

Impacts associated with blasting will be managed through the following as per Safeguard NV10 in Section 6.2 of this submissions report:

- A blast management plan will be prepared prior to the start of blasting
- Trial blasts will be carried out when blasting is proposed to occur within the minimum working distances
- Monitoring of overpressure and vibration levels will be carried out at the potentially most affected receivers for each blast
- Notification of all potential affected receivers will occur at least 24 hours prior to blasting.

As there is potential for flyrock to impact areas up to 500 metres from the point of each blast, a Flyrock Management Plan will be developed in consultation with technical specialists prior to construction (Safeguard NV11). This plan will consider measures including temporary evacuation of residents, timing of blasting to minimise disruption to local residents, and use of blast mats and soil cover.

It is noted that there have been great improvements in construction methodologies and techniques, geotechnical assessment and modelling and management and monitoring measures since the 1970s, meaning that impacts from blasting can now be more accurately assessed, monitored and managed. Through the implementation of the mitigation measures described above, the likelihood of vibration impacts from blasting negatively affecting buildings is considered low.

Submission number (s)

109, 119, 142

Issue description

Three respondents believe that the provision of architectural assessment before and after blasting is an inadequate response as it does not consider the irreparable impacts blasting will have on the Hartley Historic Site. The respondents suggest for Transport consider a regime of trial blasting geophone monitoring and alternatives to blasting such as rock cutting and multi-hole boring, which would be less expensive and intrusive, and have less vibration impacts.

Response

As noted in Section 6.5.1.2 of Appendix H of the REF, a dilapidation survey will be completed to determine the vibration risks specific to the heritage item(s) within the Hartley Historic Site. The assessment will identify what management and mitigation measure are required, which may extend beyond construction to operation. These management and mitigation measures will be put in place prior to construction works to ensure there any potential vibration impacts to the built heritage fabric at the site are managed appropriately. These measures form part of the proposal safeguards in Section 7.2 of this submissions report that will form part of the proposal approval (see Safeguards NH13 to NH15).

Alternatives to rock blasting have been considered during design development, however results from geotechnical investigations have concluded that due to the hardness of the rock, blasting would be

required at a number of locations. These include the large cutting at River Lett Hill. Other methodologies, such as rock cutting, would take considerably longer to cut through the hard rock when compared to blasting, which would extend the duration of construction by several years. The selection of blasting as the preferred construction methodology would minimise impacts of the construction program on the surrounding community. As stated in Section 3.3.5 of the REF, a blasting specialist has been engaged and would further inform the blasting methodology, including times, road closures and diversions, as detailed design progresses. A Blast Management Plan will be prepared prior to the start of blasting (Safeguard NV10), along with a Flyrock Management Plan (Safeguard NV11). These documents will be developed in consultation with technical specialists to minimise disruption to local residents, impacts to sensitive receivers and the surrounding area.

2.8.3 Construction impacts

Submission number (s)

8, 113, 145

Issue description

Three respondents request additional information about construction impacts on their property due to their proximity to the proposal.

Response

Section 6.3 and Appendix F of the REF provides an assessment of the noise and vibration impacts during construction and operation of the proposal. During construction, noise and vibration impacts during the daytime are predicted to be 'highly intrusive' or 'moderately intrusive' within 10 of the 13 noise catchment areas during some of the noisier scenarios such as site establishment, earthworks, utility works and road works. The worst-case noise levels are predicted to be around 85 to 90 dBA at the nearest receivers when noise intensive equipment is being used close to receivers. A summary of the predicted construction noise impacts in each NCA for residential receivers is shown in Table 6-45 of the REF. Figures 22 to 24 of Appendix F of the REF show the location of residences predicted to be Highly Noise Affected during worst-case noise scenarios. Detailed noise level predictions in each NCA are provided in Appendix F of the REF.

A CNVMP will be prepared before any construction begins and will include further detail on the proposed construction works and predicted impacts to sensitive receivers as per Safeguard NV01 in Section 6.2 of this submissions report. The plan will also detail how community consultation will be carried out and procedures for handling noise complaints.

Please contact the project team at Transport for NSW if there are any further questions using 1800 953 777 or gwhd@transport.nsw.gov.au.

Submission number(s)

15, 23, 47, 62, 113, 131, 132, 145

Issue description

Several respondents are concerned that the proposal will not sufficiently manage construction noise and vibration impacts on receivers, particularly given the duration of the construction phase. Some respondents are concerned that the use of construction equipment will have detrimental impacts on residences close to the proposal.

Response

Transport acknowledges that the proposal will have potential noise and vibration impacts on residential receivers and the duration of the construction works proposed. As described in Section 3.3 of the REF, subject to planning approval, construction of the proposal is planned to commence in 2022 and is expected to be open by the end of 2026.

The predicted impacts from construction noise are presented in 6.3.3 of the REF, which provides an overview of the predicted worst-case noise impacts at the most affected receivers in each noise catchment area (NCA) for each scenario where construction equipment is at the closest point to each receiver. As such, the REF presents a possible worst-case scenario for noise impacts during construction. Detailed noise level predictions are included in Appendix F of the REF.

The assessment found that the noise impacts during the daytime are predicted to be 'highly intrusive' or 'moderately intrusive' at the nearest receivers in several NCAs during some of the noisier scenarios such as site establishment, earthworks and utility works and road works. A relatively small number of the nearest residential receivers are predicted to be highly noise affected (that is, experience noise levels greater than 75 dBA) when noise intensive work is being carried out nearby. The highest noise levels would only likely be apparent for relatively short periods.

The predicted impacts from construction vibration are presented in Section 6.3.3 and shown on Figures 6-8 to 6-11 of the REF. As noted in the REF, certain receivers near to the work are likely to be within the minimum working distances for cosmetic damage and mitigation will be implemented during construction in accordance with Safeguards NV02, NV05 and NV07 (see Section 6.2 of this submissions report). This will include monitoring of vibration intensive activities, selection of alternative construction methods to reduce vibration impacts and cessation of works if vibration levels exceed the relevant criteria.

The majority of the construction works will be carried out during standard construction hours as defined in the *Interim Construction Noise Guideline* (DECCW, 2009):

- 7 am to 6 pm Monday to Friday
- 8 am to 1 pm Saturday
- No work on Sundays and public holidays.

Where there will be works outside of standard construction hours (as described in Table 3-15 in the REF), consultation with the community would be carried out before any work commences in accordance with the proposal's CCS (Safeguard SE01).

Section 6.2 of this submissions report sets out the safeguards and management measures in place to mitigate noise and vibration. Construction impacts will be minimised by implementing the CEMP as per environmental safeguard GEN01 in 6.2 of this submissions report, which will include a Construction Noise and Vibration Management Plan (CNVMP). The CNVMP will be prepared to specifically address construction noise impacts as per Safeguard NV01 in 6.2 of this submissions report.

Monitoring will be carried out before noise and/or vibration intensive activities to confirm that actual levels are consistent with the predictions and that appropriate mitigation measures from the CNVG have been implemented (Safeguard NV05). Where work is within the minimum working distances for vibration and considered likely to exceed the cosmetic damage criteria different construction methods with lower source vibration levels will be investigated and implemented where feasible (Safeguard NV07).

Submission number (s)

23

Issue description

The respondent suggests noise mitigation needs to be implemented for residents who will be exposed to 90dBA.

Response

Noise modelling was completed in line with several stringent noise modelling guidelines as described in Section 6.3.1 of the REF.

Residential receivers are close to proposed construction in most catchments; however, they are generally sparsely distributed and only a relatively small number of receivers are predicted to be impacted. The highest impacts are expected to occur when noise intensive equipment such as rockbreakers, concrete saws, chainsaws or chippers are being used. These items of equipment would only, however, be required occasionally and would be unlikely to be in use for long periods of time.

The impacts during the daytime are predicted to be 'highly intrusive' or 'moderately intrusive' at the nearest receivers in several NCAs during some of the noisier scenarios such as site establishment, earthworks and utility works and road works. Only certain work would be completed during the night-time, including work associated with the construction of bridges and road tie-in work where connections to the existing road network are necessary. The predicted night-time impacts vary from 'highly intrusive' to compliant with the NMLs depending on how close the nearest receivers are.

Only a relatively small number of receivers are predicted to have 'highly intrusive' impacts. Residential receivers that are subject to noise levels of 75 dBA or greater are considered highly noise affected by the ICNG. The number of residential receivers which could potentially be highly noise affected during the worst-case impacts from the proposal are summarised in Table 646 of the REF.

A relatively small number of the nearest residential receivers are predicted to be highly noise affected when noise intensive work is being carried out nearby. The highest noise levels would only likely be apparent for relatively short periods. Appropriate respite will be provided to affected receivers in accordance with the CNVG and/or the proposal's conditions of approval (Safeguard NV03). Where receivers are impacted near compounds or fixed work areas with long durations, hoarding, or other shielding structures, will be used during construction (Safeguard NV04). Potential noise mitigation measures including at-receiver mitigation will be considered for receivers that qualify for consideration of additional noise mitigation measures in accordance with Safeguard NV13.

Transport is committed to further consultation with the community and other stakeholders to address noise impacts. Communication will be facilitated through the CCS as per Safeguard SE01 in Section 6.2 of this submissions report. The CCS will include but is not limited to mechanisms to keep relevant stakeholders updated on construction activities, schedules and milestones, and avenues for the community to provide feedback or to register complaints. Details on how respite would be applied

where ongoing high impacts are seen at certain receivers will be included in the CNVMP as per Safeguard NV01 in Section 6.2 of this submissions report.

2.8.4 Design

Submission number (s)

9, 10, 23, 107, 131, 132, 133, 137, 155, 165

Issue description

Several respondents request a noise barrier to mitigate operation noise impacts at their property, and requested they be considered for the Noise Abatement Program.

One respondent requests noise barriers be included in the design and that plans should be made available now. Another suggests that mounds should be considered for use as noise barriers, with barrier walls used where extra height is needed.

One respondent suggests concrete noise walls would not be supported by the community should they be included at later design stages.

Response

Transport acknowledges in Section 6.3 and Appendix F of the REF that operation of the proposal could lead to an increase in noise and vibration levels for some residential receivers in close proximity to the proposal. In total, 44 residential receivers are considered eligible for consideration of additional nose mitigation as per the operational road traffic noise criteria (refer to Figures 6-13 to 6-16 of the REF).

For receivers that qualify for consideration of 'additional noise mitigation' for the operational phase of the proposal, potential noise mitigation measures are to be considered in the following order of preference:

- At-source mitigation such as quieter road pavement surfaces
- In-corridor mitigation such as noise mounds and noise barriers
- At-receiver mitigation including at-property treatments, which involve architectural treatments to improve building elements such as doors, windows, and vents (Safeguard NV13).

The type of mitigation is dependent on several factors including the construction of each resident and the number and density of affected residents. As noted above, noise mounds and noise barriers are typically only justified when many residences in close proximity are noise affected.

The process for determining noise barriers is described in the CNVG (refer to Appendix F of the REF). Noise barriers are generally considered where there are four or more closely spaced receivers with exceedances of the NMG triggers (refer to Section 4.6.7 of Appendix F of the REF). As such, noise walls are not suitable for mitigation for this proposal. The most suitable mitigation will be at-property treatments.

Transport have committed to further noise monitoring during detailed design. Any changes in design will include additional noise monitoring and necessary adjustments to the noise model. To assist in understanding the noise impacts of the highway upgrade, noise monitoring at a location representative of residents at this location will be carried out during the detailed design phase and again following completion of the proposal. Potential noise mitigation measures are to be considered as per Safeguard NV13 in Section 6.2 of this submissions report.

Transport will also conduct noise monitoring after construction and once traffic patterns have adjusted to the upgraded highway, to validate the post-construction noise model. In the circumstance that the validation of the model indicates additional receivers are eligible to receive consideration of noise mitigation measures, these will be addressed at that time.

The purpose of the Noise Abatement Program is to mitigate noise impacts associated with existing State and Federal roads that are not subject to upgrade and where traffic noise levels are high. Noise mitigation treatments will be delivered as part of the proposal and the abatement program is not applicable.

Submission number (s)

114

Issue description

The respondent believes that the proposal will increase noise and vibration, particularly with the inclusion of bridges in the design.

Response

Representative scenarios were developed to assess the likely impacts from the various phases of the proposal, as outlined in Section 6.3 of the REF. This included construction site activities involved during bridge construction. The assessment uses realistic worst-case scenarios to determine the impacts from the noisiest 15-minute period that are likely to occur for each work scenario, as required by the ICNG. The impacts represent construction noise levels without mitigation applied. The results of these assessments are displayed in Table 6-45 of the REF.

Submission number (s)

57

Issue description

The respondent suggests simplifying the design will reduce noise and vibration impacts.

Response

The proposal has been designed to deliver improvements to the traffic network and road safety. During the road design process, Transport has incorporated safety principles to ensure the upgraded highway meets road safety standards and that the risks to all road users including pedestrians and cyclists are minimised. Once operational, the proposal would have long term positive impacts on access and connectivity for local and regional communities, business, and industry (see Section 2 of the REF).

For receivers that qualify for consideration of additional noise mitigation, potential noise mitigation measures are to be considered in the following order of preference as per Safeguard NV13 in Section 6.2 of this submissions report:

- At-source mitigation such as quieter road pavement surfaces
- In-corridor mitigation such as noise mounds and noise barriers
- At-receiver mitigation including at-property treatments.

2.8.5 Operational impacts

Submission number (s)

6

Issue description

The respondent acknowledges anticipated construction noise and vibration impacts, however, notes that notes noise and vibration would be reduced once operational as a result of the removal of steep gradients, improved road surfaces and a reduction in heavy vehicle braking.

Response

Transport acknowledges the respondent's support of the proposal and the predicted reduction in noise during operation of the proposal.

Submission number (s)

8

Issue description

The respondent is concerned with construction noise impacts at their residence, noting they work night shifts (and therefore sleep through the day).

Response

As outlined in Section 3.3 of the REF, construction hours will be in accordance with the standard construction hours as defined in the Interim Construction Noise Guideline (DECCW, 2009):

- 7 am to 6 pm Monday to Friday
- 8 am to 1 pm Saturday
- No work on Sundays and public holidays.

Transport will consult directly with the resident to identify appropriate mitigation measures, respite periods and/ or alternative accommodation in accordance with the CNVG.

Submission number (s)

9, 10, 15, 23, 36, 46, 53, 59, 64, 68, 74, 97, 102, 106, 107, 110, 113, 122, 123

Issue description

Several respondents are concerned that operational noise levels at their properties will increase as a result the proposal. Particular concerns raised were:

- The increased proximity of the highway to residences will lead to increased traffic noise
- The increase in trucks using the highway will lead to increased operational noise levels
- The removal of several mature trees that usually buffer traffic noise from the highway
- The location of residences near Hassans Walls and the proposed cuts mean that there is a potential for reflected sound.

Another respondent expressed concern about increased noise impacts at heritage buildings.

Response

Operational noise impacts of the proposal are assessed in Section 6.3.3 and Appendix F of the REF. Transport acknowledges that the proposal is predicted to alter operational road traffic noise levels for many receivers in the construction footprint due to the revised alignment of the Great Western highway (see Section 6.3 and Appendix F of the REF). Exceedances of the relevant criteria are predicted at the nearest residential receivers (refer to tables 6-49 to 6-51 of the REF). These exceedances are generally due to a mixture of increasing noise levels, exceedances of the cumulative limit criteria and acute road traffic noise levels. Transport acknowledges that maximum noise levels near roads are generally controlled by noise from trucks. Where roads are located close to residential receivers there is potential for sleep disturbance impacts from maximum noise level events associated with truck movements. However, the proposal would result in reduced grades, particularly on River Lett Hill, which would improve the ascent and descent of heavy vehicles travelling along Great Western Highway. This would reduce the need for acceleration and braking and in turn, operational noise from heavy vehicles.

Any changes in design will include additional noise monitoring and necessary adjustments to the noise model. To assist in understanding the noise impacts of the highway upgrade, noise monitoring at a location representative of residents at this location will be carried out during the detailed design phase and again following completion of the proposal. Potential noise mitigation measures are to be considered as per Safeguard NV13 in Section 6.2 of this submissions report.

Transport will also conduct noise monitoring after construction and once traffic patterns have adjusted to the upgraded highway, to validate the post-construction noise model. In the circumstance that the validation of the model indicates additional receivers are eligible to receive consideration of noise mitigation measures, these will be addressed at that time.

Transport acknowledges that vegetation clearing will occur due to the proposal. However, minimising vegetation clearing and maximising revegetation and planting opportunities will be considered where feasible during the detailed design phase (Safeguard LV02) and native vegetation will be re-established in accordance with Guide 3: Re-establishment of native vegetation of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Safeguard BI06). It should be noted that vegetation does not serve as effective noise attenuators, particularly if they are situated away from the road.

A noise model of the construction footprint has been used to predict noise levels from the operation of the proposal to the surrounding receivers. The model uses Calculation of Road Traffic Noise (CoRTN) (UK Department of Transport, 1988) algorithms in SoundPLAN software. Local terrain, receiver buildings and structures were digitised in the noise model to develop a three-dimensional representation of the proposal and surrounding areas. The noise model includes a 'digital ground model' which is an accurate 3D representation of the terrain in the construction footprint. The ground model was constructed from LIDAR point cloud data and 1 m contours.

Submission number (s)

9

Issue description

The respondent notes noise projections for 2036 have been provided, however questions whether monitoring will be completed once the proposal is completed and operational.

Response

Noise and vibration impacts are summarised in Section 6.3 and Appendix F of the REF. Transport will conduct noise monitoring after construction and once traffic patterns have adjusted to the upgraded highway (between 2 to 12 months), to validate the post-construction noise model in accordance with the Transport *Environmental Noise Management Manual practice note 8*. In the circumstance that the validation of the model indicates additional receivers are eligible to receive consideration of noise mitigation measures, these will be addressed at that time as per Safeguard NV13. Potential noise mitigation measures will be considered in the following order of preference:

- At-source mitigation such as quieter road pavement surfaces
- In-corridor mitigation such as noise mounds and noise barriers
- At-receiver mitigation including at-property treatments, which involve architectural treatments to improve building elements such as doors, windows, and vents.

Submission number (s)

9

Issue description

The respondent requests their whole property, not just their residence, be considered in the noise modelling and consideration of operational noise mitigation measures.

Response

Noise modelling considers buildings rather than entire properties as per the criteria in *Road Noise Policy* and *Noise Criteria Guideline* (DECCW, 2011). These criteria apply at the facades of sensitive receivers and is thus, where noise impacts are assessed. However, where there will be operational noise impacts, safeguards and management measures outlined in Section 6.2 of this submissions report will be in place to minimise impacts.

Submission number (s)

10

Issue description

The respondent has previously expressed concerns to Transport regarding noise impacts and suggested a speed limit reduction from the Forty Bends Road turnoff to decrease night-time noise levels.

Response

Transport has considered the speed of traffic in the noise modelling for the proposal (refer to Section 4.5.6 of Appendix F of the REF). Transport will also conduct noise monitoring after construction and once traffic patterns have adjusted to the new highway, to validate the post-construction noise model. In the circumstance that the validation of the model indicates additional receivers are eligible to receive consideration of noise mitigation measures, these will be addressed at that time.

A reduction in speed is inconsistent with the proposal's objective to improve travel time between Katoomba and Lithgow and would have negligible impacts on reducing noise levels.

Submission number (s)

70

Issue description

The respondent notes that mitigation for noise and vibration is good.

Response

Transport acknowledges the respondent's support for the proposal and the proposed mitigation measures.

Submission number (s)

115, 145

Issue description

Two respondents are concerned about noise and vibration impacts from the new service roads.

Response

As identified in Section 6.3.3 of the REF, the predicted operational road traffic noise levels at residential receivers are summarised in Table 6-49 for the 2026 at opening and 2036 future design scenarios, which includes consideration of operation of the service roads. The table shows the worst-case impacts in each NCA, which are typically experienced by the receivers nearest to the proposal. It is anticipated that four residential receivers in noise catchment area 7 (which contains Jenolan Caves Road) would be impacted with maximum noise levels predicted to increase by up to three dB due to alignment and elevation changes of the new Great Western Highway relative to the existing highway. Impacted receivers may be eligible for additional noise mitigation as identified in Figure 6-13 to 6-16 of the REF (Safeguard NV13).

2.8.6 Hartley Valley Rest areas

Submission number (s)

23, 28, 35, 38, 40, 53, 62, 83, 103, 119

Issue description

Several respondents are concerned that the truck rest areas will have negative noise impacts on residents in particular idling vehicles.

Response

Transport acknowledges that the rest areas may introduce additional impacts and maximum noise levels from events such as truck airbrake releases, which have been considered in the noise assessment, at locations NCA05 and NCA06 (refer to Table 6-51 of the REF). Vehicle idling however, has not been considered in the noise assessment. Noise monitoring in the vicinity of the rest areas found that maximum noise level events are a regular feature in the existing environment, with maximum noise events typically ranging from around 65 to 90 dBA. Noise levels and maximum events

are, however, expected to generally be louder from the realigned Great Western Highway during operation. As such, it is expected that the noise from idling vehicles will be 'drowned out' by maximum noise events and background highway noise. During operation, noise levels from passing vehicles on the highway would be louder than vehicles idling in the rest areas and so these were considered in the noise model to determine the 'worst case' scenario. An operational noise assessment would be carried out during detailed design to assess potential noise impacts from the proposal, including rest areas. Sensitive receivers will be contacted should operation noise mitigation be considered based on the results of updated modelling.

The rest areas have been designed into a cut, which would reduce the noise pollution for the surrounding receivers. Also, it should be noted that the proposed rest areas are for a short-term rest stop to check loads and provide sufficient facilities for a break rather than a long-term rest area. A review of the estimated demand of the proposed heavy vehicle rest areas has resulted in a reduction in vehicle parking spaces. The short-term design and reduced parking spaces will reduce idling and therefore, noise impacts, at the proposed rest areas.

Heavy vehicles using the proposal would not have to traverse the existing steep gradients, which would reduce heavy vehicle operation noise from the existing condition. Transport will further consider noise mitigation around the rest areas during detailed design that will also serve as a mitigation to reduce visual impact and blend in with the surroundings. Key stakeholders will be involved in the development of these urban design features.

For receivers that qualify for consideration of 'additional noise mitigation' mitigation will be provided in accordance with Safeguard NV13 in Section 6.2 of this submissions report.

2.9 Aboriginal heritage

2.9.1 Impacts to Aboriginal heritage

Submission number(s)

5, 12, 14, 15, 20, 23, 26, 28, 29, 34, 36, 38, 39, 41, 42, 43, 44, 46, 47, 50, 51, 53, 55, 56, 57, 59, 60, 65, 68, 69, 73, 74, 76, 78, 80, 81, 86, 87, 90, 91, 95, 96, 97, 100, 101, 102, 103, 105, 106, 107, 116, 120, 123, 124, 127, 128, 131, 134, 136, 143, 145, 146, 147, 166, 173, 179

Issue description

Several respondents raised the following concerns regarding the proposal's impacts on Aboriginal sites:

- The REF significantly devalues the cultural value of the area and the Aboriginal community. The respondent notes that the overall significance of moderate to high was judged on 11 of the 20 sites.
- The proposal will negatively impact the cultural and ancestral value of the Hartley Valley
- The loss of Aboriginal heritage sites to save five minutes of travel time is not justifiable
- Requests for Aboriginal heritage sites to be preserved for future generations
- Request for Transport to consider alternative locations for the proposal to avoid impacts on Aboriginal sites
- Opposition to the Great Western Highway Upgrade due to impacts on Aboriginal heritage
- Concerns that the proposal will negatively impact Aboriginal heritage at the foot of Mount Victoria
- Transport has failed to comprehend the cultural impact on significant Aboriginal heritage and history
- Aboriginal heritage is often not afforded adequate consideration and protection despite being protected under the NPW Act
- Requests for the proposal to be rerouted to preserve artefacts, particularly around River Lett Hill
- Archaeological surveys in the proposal area have been inadequate.

Response

Aboriginal heritage is a key consideration in the proposal development, beginning as part of the initial study area investigations in 2008 and continuing throughout corridor and route selection and into the concept design and REF stage. As discussed in Section 2 of the REF, the options assessment considered the construction footprint, with the proposal being identified as having the least overall impacts on Aboriginal heritage.

By investigating the environmental and archaeological context of the area and utilising a predictive model, constraints mapping was developed and considered during initial corridor selection (RTA, 2008). The preferred route selected, that follows the existing disturbed corridor of the Great Western Highway, was shown to have the least impact on area of archaeological potential compared to the alternative options.

In relation to the concept design, impacts to Aboriginal cultural heritage were assessed in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*

(Code of Practice) (DECCW, 2010a) and in consultation with RAPs (refer to Section 6.4 and Appendix G of the REF). There are 20 Aboriginal sites within the construction footprint that will be directly impacted by the proposal (refer to Tables 6-60 and 6-61 of the REF). Any impacts to Aboriginal heritage will require an Aboriginal Heritage Impact Permit (AHIP) acquired from Heritage NSW. An Aboriginal Cultural Heritage Assessment Report (ACHAR) has been prepared by Transport in accordance to best practice guidelines, including the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales* (OEH, 2011), the Code of Practice, the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW, 2010b), and the *Procedure for Aboriginal cultural heritage consultation and investigation* (PACHCI) (Roads and Maritime Services, 2011), .

Transport acknowledges that 20 Aboriginal sites within the construction footprint will be directly impacted and three sites outside of the construction footprint may be subject to minor to moderate indirect impacts associated with vibration and settlement (refer to Tables 6-60 and 6-61 of the REF). Safeguards and management recommendations have been developed in consultation with RAPs to avoid impacts where possible and where impacts are unavoidable, to effectively mitigate them (refer to Section 6.2 of this submissions report). These measures include protective fencing for 15 sites (Safeguard AH06), salvage collection for seven sites and salvage excavations for nine sites (Safeguard AH07) to mitigate the irreversible loss of cultural value and scientific content. Measures also includes the development of an Aboriginal Heritage Management Plan (AHMP) (Safeguard AH01), which will document standard procedures for unexpected finds, detailed site salvage strategy, management and curation of salvaged Aboriginal objects, and detailed locations and installations procedures for fencing and protective coverings. Opportunities to minimise impacts to four Aboriginal heritage sites will be investigated during detailed design as per Safeguard AH02. Safeguards AH05 and AH06 will be in place to minimise impacts to Aboriginal heritage during the construction phase.

As detailed in the ACHAR (Appendix G of the REF), the archaeological surveys were carried out by seven heritage specialists over 15 days, and test excavations were carried out by about 20 personnel over 38 days, with nominated representatives from Aboriginal Land Councils and Traditional Owner Groups. Consultation conducted during survey provided an opportunity for the Aboriginal stakeholder representatives to provide:

- Comment on the potential for Aboriginal cultural material to be present within the proposal area
- Comments on the cultural significance of any Aboriginal cultural heritage sites identified during the survey
- Comment on proposed management recommendations, including recommendations for further assessment.

In Stage 3 of the proposal development, 34 RAPs participated in the AFG meeting to aid the preparation of the ACHAR (refer to Appendix G of the REF). In Stage 4, a copy of the ACHAR will be provided to Heritage NSW and all RAPs for review and comment, and management measures were proposed. Additional consultation with RAPs is planned for future stages of the proposal consistent with the relevant guidelines.

Interpretive elements have been considered for design integration in the Hartley Valley, including public works of art, interpretive signage, bridges, earthworks and plantings (Safeguard AH04) to celebrate and acknowledge the Aboriginal history of the local area and today's Aboriginal community that connects with the area.

Submission number(s)

144

Issue description

The respondent states that the proposal will impact 19 indigenous sites including an important possum skin processing site and fire hearth site. The respondent suggests the REF's heritage technical studies do not adequately assess the significance of the landscape nor the overall, cumulative impact of the project on these values.

Response

Appendices G and H of the REF contain the ACHAR and the Technical Working Paper - Non-Aboriginal Heritage, which discuss the Aboriginal and non-Aboriginal cultural landscape of the proposal area and acknowledges the importance of the cultural landscape.

Section 6.4 and Appendix G of the REF provides an assessment of Aboriginal cultural heritage potentially impacted by the proposal, including an assessment of impacts on the Aboriginal cultural heritage landscape.

Section 9.7 in Appendix G of the REF assesses the cumulative impacts of the proposal on Aboriginal heritage, including consideration of impacts at a regional level. There is currently no defined or endorsed process for the assessment of cumulative impacts on Aboriginal cultural heritage in New South Wales. To properly assess the cumulative impacts of the proposal on Aboriginal heritage, the impacts on individual Aboriginal sites must be considered within their cultural context on a regional level. Section 6.17 of the REF considers the potential impacts of the proposal within the broader program of work and amongst other projects and developments.

Transport acknowledges that there are 19 Aboriginal sites within the construction footprint that will be directly impacted by the project (refer to Tables 6-60 and 6-61 of the REF). As summarised in Section 6.4.4 of the REF, management recommendations have been developed in consultation with RAPs to avoid impacts where possible and where impacts are unavoidable, to effectively mitigate them. Management of Aboriginal sites would include protection and salvage measures (Safeguard AH09 and AH07), development of a curation policy for salvaged Aboriginal objects (Safeguard AH08) and procedures for unexpected discovery of Aboriginal objects (Safeguard AH10). As per environmental safeguard AH06 in Section 6.4 of the REF, temporary fencing will be placed on the boundary of listed Aboriginal heritage sites to mitigate construction impacts (see Table 6-62 of the REF). As per environmental safeguard AH01 in Section 6.2 of this submissions report, site specific management measures will be described in an AHMP that will form part of the CEMP developed for the project.

Landscape character and visual impacts are addressed in Section 6.9 and Appendix L of the REF. Section 6.9.2 of the REF and Section 2 of Appendix L provides a contextual analysis of the study area and acknowledges the scenic nature of the landscape which includes rural-residential and native woodland landscape characteristics. 23 representative viewpoints, including the view from Bardens lookout, off Mount York Road (Viewpoint 1 in Figure 6-36 of the REF), within proximity of the proposal were selected for the visual impact assessment (refer to Figure 6-37 of the REF). Transport acknowledges that during the operation phase, 13 of the viewpoints are expected to have a visual impact considered greater than moderate with four viewpoints experiencing high visual impacts. However, the overall visual impact of the proposal would be reduced to moderate to moderate-low through the application of the safeguards and management measures identified in Section 6.2 of this submissions report (refer to Table 6-93 of the REF).

The hearth which was discovered at 45-4-1097 (GWH 7) has been scientifically dated, with three radiocarbon samples sent for dating. A copy of the results was provided as Appendix C in the Archaeological Assessment Report (AAR) (refer to the ACHAR attached as Appendix G of the REF) and RAPs. The age of the hearth will be discussed further directly with RAPs.

45-4-1097 (GWH 7) has been identified as having high significance and recommendations for future works has taken this into consideration. Management measures and safeguards will be in place for the site to minimise impacts as summarised in Section 6.4.4 of the REF. This includes, but is not limited to, avoidance of the site where possible, active protection (Safeguard AH06), community collection (Safeguard AH07), and salvage excavation (Safeguard AH08), see Section 6.2 of this submissions report. These recommendations were put in place following community consultation with RAPs of the project.

The ACHAR was carried out in accordance with the Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales, the Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (Code of Practice), the Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (ACHCRP), and the Procedure for Aboriginal cultural heritage consultation and investigation (PACHCI). Transport's heritage specialists have made every effort to ensure the information used in the assessment is correct. Extensive desktop assessments have been carried out that include looking at local histories, environmental and geographical reports, and engaging with Aboriginal traditional owners. Published records and databases have also been extensively researched to gather as much information about each project area. The assessment has been well-researched, however, if there is information that was unable to be sourced at the time of report preparation, it would not have been included.

Section 9.7 in Appendix G of the REF assesses the cumulative impacts of the proposal on Aboriginal heritage. There is currently no defined or endorsed process for the assessment of cumulative impacts on Aboriginal cultural heritage in New South Wales. To properly assess the cumulative impacts of the proposal on Aboriginal heritage, the impacts on individual Aboriginal sites must be considered within their cultural context on a regional level.

Section 6.17 of the REF considers the potential impacts of the proposal within the broader program of work and amongst other projects and developments.

Submission number(s)

127

Issue description

The respondent suggests that construction must be careful of any unexpected Aboriginal heritage finds.

Response

Safeguards and management measures in place to mitigate the proposal's impacts on Aboriginal heritage are summarised in Section 6.2 of this submissions report. The Standard Management Procedure - Unexpected Heritage Items (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 as per Safeguard AH10. This applies where Transport does not have approval to disturb the object/s or where a specific safeguard for managing the disturbance (apart from the Procedure) is not in place. Work will only re-commence once the requirements of that Procedure have been satisfied.

Submission number(s)

12

Issue description

The respondent requests that Transport does not negatively impact potential Aboriginal heritage at Fern Hill.

Response

The Fern Hill property was unable to be assessed with surveys. The assessment of GWH 33 will be carried out once the Fern Hill property is acquired prior to construction and will be in accordance with the Code of Practice (DECCW, 2010a). The same assessment process as the rest of the Great Western Highway Upgrade Program will be carried out for potential archaeological deposits (PADs) that weren't able to be accessed during text excavations.

Aboriginal heritage has been a key consideration during design development and impacts have been avoided and minimised, where possible. Further refinement to minimise impacts on Aboriginal heritage will occur during detailed design. In consultation with RAPs, Transport will develop measures to avoid impacts to Aboriginal cultural heritage sites and items where possible, or mitigate impacts they cannot be avoided. This will include protection and salvage measures. Transport will seek an Aboriginal Heritage Impact Permit (AHIP) from Heritage NSW before any known Aboriginal heritage sites are impacted.

Submission number(s)

13, 26, 44, 127, 128, 130, 143, 145

Issue description

Several respondents are concerned the proposal will impact a culturally significant Aboriginal possum dreaming site.

Response

Transport have consulted with the Aboriginal community regarding the possum dreaming site, including its location in relation to the proposal. Transport acknowledges the significance of this site to the Aboriginal community. The possum dreaming site area is large, about eight hectares based on information provided by the Aboriginal community. The existing concept design and construction footprint will impact a small portion of the site (less than 0.5 hectares) and will be subject to fill embankment works. Further studies and consultation with Aboriginal community will be conducted to find out the extent of the possum dreaming site and implement mitigation around it where reasonable and feasible.

As noted in responses above, management recommendations have been developed in consultation with RAPs to avoid impacts where possible and where impacts are unavoidable, to effectively mitigate them (refer to Section 6.2 of this submissions report). Management of Aboriginal sites will include protection and salvage measures (Safeguards AH09 and AH07), development of a curation policy for salvaged Aboriginal objects (Safeguard AH08) and procedures for unexpected discovery of Aboriginal objects (Safeguard AH10). Temporary fencing will be placed on the boundary of listed Aboriginal heritage sites to mitigate construction impacts (see Table 6-62 of the REF) as per Safeguard AH06. Site specific management measures will be described in an AHMP that will form part of the CEMP developed for the proposal (Safeguard AH01).

Submission number(s)

23, 25, 35, 37, 38, 46, 47, 53, 54, 55, 58, 60, 79, 80, 86, 87, 89, 90, 91, 95, 96, 102, 103, 105, 107, 113, 114, 115, 119, 120, 124, 128, 138, 143, 145, 146, 147

Issue description

Several respondents request that more consideration is given to the Aboriginal fire hearth discovered in a test pit which has been carbon dated as 5,000 years old. One respondent requests this site is taken into consideration prior to construction. Further consultation with the Aboriginal community is suggested.

Response

The hearth which was discovered at 45-4-1097 (GWH 7) has been scientifically dated, with three radiocarbon samples sent for dating. A copy of the results was provided as Appendix C in the Archaeological Assessment Report (AAR) (refer to the ACHAR attached as Appendix G of the REF) and RAPs. The age of the hearth will be discussed further directly with RAPs.

The site has been identified as having high significance and recommendations for future works has taken this into consideration. Safeguards and management measures will be implemented to minimise impacts, as summarised in Section 6.2 of this submissions report. This includes, but is not limited to, avoidance of the site where possible, active protection (Safeguard AH06), community collection (Safeguard AH07), and salvage excavation (Safeguard AH08). These recommendations were developed following community consultation with RAPs.

An Aboriginal Heritage Management Plan (AHMP) will be developed in consultation with the RAPs to document standard procedures for unexpected finds procedure, detailed site salvage strategy, management and curation of salvaged Aboriginal objects, fencing and protective coverings, permissible activities and vehicle access inside protected Aboriginal areas, as per Safeguard AH01 in Section 6.2 of this submissions report.

2.9.2 Salvage and collection of artefacts

Submission number(s)

14, 23, 90, 95, 96, 127

Issue description

Several respondents suggested Aboriginal artefacts area were removed without consultation with the local Aboriginal community. The respondents requested that any artefacts should not be moved from the location where they were discovered as this goes against the Traditional owners' cultural beliefs. One respondent noted the mitigation measures to salvage and take artefacts offsite goes against the essence of local Aboriginal culture.

Response

Transport are working with the Aboriginal community to determine the best way to protect artefacts and will be led by the community as a curation policy for salvaged Aboriginal objects is developed. All collection and movement of Aboriginal objects is carried out in consultation and agreement with the Aboriginal community.

Through the test excavation program, as discussed with RAPs, artefacts recovered from the excavation sites were transported from the excavation site to the office of the heritage specialists and are securely stored in a locked cabinet in accordance with Requirement 16b of the Code of Practice (DECCW, 2010a). The location of the artefacts will be recorded on the heritage specialist's database, to create an electronic record of the date they were depositioned into this temporary storage location.

Artefacts will be stored in the double-bagged resealable bags they were placed in during the excavation program. Durable labels made from aluminium plate or similar material will be placed inside bags to provide a resilient label of the artefacts' provenance.

Artefacts will be kept in the same temporary storage location until a strategy for repatriation or permanent storage can be implemented. At this point the artefacts will be handed over to their permanent custodian(s). The date of the handover will be recorded on the heritage specialist's database. If artefacts are reburied, the burial location will be recorded on an Aboriginal Site Recording Form and lodged on the AHIMS.

Salvage collection is warranted at listed Aboriginal sites in the construction footprint where stone artefacts have been recorded on the surfaces as per environmental safeguard AH07 in Section 6.2 of this submissions report. Further, salvage collection will be carried out by a suitable qualified archaeologist. Procedures for the management and curation of salvaged objects will be developed in consultation with RAPs and will be included in the AHMP (Safeguard AH01).

2.9.3 Connection to Country

Submission number(s)

14, 127, 143

Issue description

Three respondents are concerned developments such as the proposal would impact the community's identity, as well as the health of the environment and their personal health. The respondents believe that the loss of land, flora and fauna and Aboriginal significant artefacts will disengage the Aboriginal community.

Response

Transport acknowledges that the proposal will result in modifications to the natural environment. As noted in responses above, Transport will develop measures in consultation with RAPs to avoid impacts to Aboriginal cultural heritage sites and items where possible or mitigate impacts if they cannot be avoided (refer to Section 6.2 in this submissions report).

Detailed design will further consider minimising vegetation clearing and maximising revegetation and planting opportunities as per Safeguard LV02. To minimise impacts to flora and fauna within the construction footprint, Safeguards BI01 to BI39 will be implemented. Interpretive elements will be considered for design integration across the proposal, including public works of art, interpretive signage, bridges, earthworks and plantings to celebrate and acknowledge the Aboriginal history of the local area and today's Aboriginal community that connects with the area (Safeguard AH04).

Submission number(s)

14

Issue description

The respondent recounted the Aboriginal history of the Mount Victoria area, noting several locations on site believed to hold strong cultural significance. There respondent advised that impacts on site, habitat or totems result in sickness for Aboriginal people.

Response

Transport acknowledges the proposal's potential impacts on Aboriginal cultural heritage. Consultation with Aboriginal community members has confirmed that the entire proposal area is significant to Aboriginal people, with a number of sites being identified as having high cultural significance. We are working with the Aboriginal community to determine the best way to protect Aboriginal cultural sites and to develop measures to avoid impacts to Aboriginal cultural heritage sites and items where possible, or mitigate impacts if they cannot be avoided.

2.9.4 Adequacy of assessment

Submission number(s)

22

Issue description

The respondent believes that the REF has documented Aboriginal sites extensively and believes that the management measures outlined in the REF will sufficiently protect these Aboriginal heritage sites.

Response

Transport acknowledges the respondent's support of the Aboriginal heritage assessment carried out for the proposal.

Submission number(s)

113

Issue description

The respondent suggested utilising heritage studies from 2013 does not adequately represent the location given the development of the area within the last nine years.

Response

The Aboriginal heritage assessment has been conducted in accordance with relevant guidelines utilising recent data of the proposal area (refer to Section 5.1 of Appendix G of the REF). Desktop assessment of the proposal area was conducted from October 2019 to July 2021, whilst archaeological surveys were conducted between November 2019 and March 2020. To inform the decisions related to Aboriginal heritage in the proposal area, consultation with the Aboriginal community representatives have also been carried out from November 2019 until present.

Submission number(s)

144

Issue description

The respondent states that the REF's technical studies do not adequately assess the significance of the cultural landscape nor the overall, cumulative impact of the project.

Response

Appendices G and H of the REF contain the Aboriginal Cultural Heritage Assessment Report (ACHAR) and the Technical Working Paper - Non-Aboriginal Heritage, which discuss the Aboriginal and non-Aboriginal cultural landscape of the proposal area and acknowledges the importance of the cultural landscape.

Section 9.7 in Appendix G of the REF assesses the cumulative impacts of the proposal on Aboriginal heritage. There is currently no defined or endorsed process for the assessment of cumulative impacts on Aboriginal cultural heritage in New South Wales. Transport acknowledges that sites do not exist in isolation but are associated with particular landforms and natural features. To properly assess the cumulative impacts of the proposal on Aboriginal heritage, the impacts on individual Aboriginal sites must be considered within their cultural context on a regional level.

Section 6.17 of the REF considers the potential impacts of the proposal within the broader program of work and amongst other projects and developments.

Transport recognises the rich cultural heritage present in the Hartley Valley, and across the Great Western Highway corridor. Transport has engaged consultants who are currently progressing an Aboriginal Cultural Heritage Study and Non-Aboriginal Thematic Heritage Study. In accordance with Safeguard AH04 Transport is in the process of developing a Cultural Interpretation Strategy (CIS) to be incorporated into the Urban Design Plan to highlight landscapes of heritage in the Hartley Valley. The process includes:

- Reviews of historical documentation for preliminary themes and narratives
- Identifying community stakeholders, with connection to Country and heritage
- One-on-one consultation
- Workshops with Community
- Key messaging
- Considering where and how these themes and stories are best exemplified.

2.10 Non-Aboriginal heritage

2.10.1 Impacts to non-Aboriginal heritage

Submission number(s)

20, 22, 23, 41, 47, 55, 59, 61, 63, 65, 66, 68, 69, 78, 80, 86, 89, 90, 91, 95, 96, 97, 100, 101, 102, 103, 106, 107, 108, 110, 113, 120, 124, 129, 132, 138, 143, 144, 145, 147, 156, 163, 171, 174, 175, 179

Issue description

Several respondents raised the following issues regarding the proposal's impacts on non-Aboriginal heritage:

- The area holds significant European cultural value which would be negatively impacted by the proposal
- Concerns over the impact and loss of heritage sites and items
- Concerns over the preservation of historical sites
- The proposed overpasses and bridges will negatively impact cultural and historical assets in the proposal area
- Concerns the non-Aboriginal heritage assessment is inadequate and further assessment is required, particularly in relation to long term impacts to Hartley Valley
- No consideration has been given for the impacts of the proposal on non-Aboriginal heritage in Hartley Valley
- Opposition to the upgrade due to impacts on non-Aboriginal heritage
- Request for Australia's colonial history to be preserved in Hartley Valley.

Response

Transport recognises the rich cultural heritage present in the Hartley Valley, and across the Great Western Highway corridor. Section 6.5 and Appendix H of the REF assesses the proposal's impacts on non-Aboriginal heritage. Heritage is a core consideration of the design development process and route options were assessed against their potential heritage impacts (refer to Section 2 of the REF). This road corridor was chosen as it avoided the majority of impacts on non-Aboriginal heritage, particularly at the highway south of Little Hartley.

Assessment of non-Aboriginal heritage was carried out as part of the REF in accordance with the Heritage NSW guidelines, the *Burra Charter*, the Transport Heritage guidelines, and relevant Commonwealth heritage guidelines. In addition, further assessment of non-Aboriginal heritage impacts has been carried out as part of this submissions report and is summarised in Section 0 and attached as Appendix C of this submissions report.

Transport is currently in the process of developing a CIS to be incorporated into the Urban Design Plan to highlight landscapes of heritage in the Hartley Valley. To develop the CIS, Transport has engaged consultants to provide non-Aboriginal and Aboriginal heritage interpretation to develop heritage themes that enhance the special values of each heritage place in the context of operational, management, planning and conservation objectives of the proposal. One-on-one consultation with community stakeholders is currently being carried out as a part of development of the CIS.

Transport acknowledges that the proposal will have a major impact to four heritage items, a moderate impact to four, and a negligible or minor impact to 23 heritage items as summarised in Section 6.5.3 of

the REF. Overall, given the constraints of the Hartley Valley and the incredibly rich heritage landscape along the Great Western Highway, the proposal achieves desirable outcomes by avoiding or mitigating significant impacts to the majority of heritage items within the construction footprint. The overall cumulative impact to historical heritage sites within the construction footprint from the proposal is assessed to be minor. Although the route has historically seen modifications and alignments over time in response to changes in technology and safety standards, these changes were generally minor and/or incremental in nature. There have been no major realignments of the Great Western Highway in recent decades, with the exception of the safety upgrades previously completed in the Forty Bends area beneath Hassans Walls.

Management and mitigation measures will be implemented to address impacts on non-Aboriginal heritage based on the impact type and level as summarised in Section 6.2 of this submissions report. These measures include but are not limited to archival recording (Safeguard NH13), archaeological test excavation (Safeguard NH15), landscaping and sympathetic plantings (Safeguard NH11), monitoring of ground disturbance works (Safeguard NH16) and engagement of subject matter experts (such as heritage structural engineer and an arborist) where appropriate.

Submission number(s)

23

Issue description

The respondent noted the heritage significance of the area has been highlighted in previous environmental assessments carried out in the area.

Response

As discussed in the non-Aboriginal heritage technical working paper (Appendix H of the REF), the assessment of non-Aboriginal heritage included a desktop study that incorporated a review of relevant heritage reports and source material.

Submission number(s)

116

Issue description

The respondent believes that the 10-minute travel time saved by the proposal does not justify the negative impacts on non-Aboriginal heritage.

Response

Transport acknowledges that non-Aboriginal heritage is a key area of significance for the local community. In consultation with key stakeholders, safeguards and management measures (as summarised in Section 6.2 of this submissions report) have been developed to address the negative impacts on non-Aboriginal heritage in the proposal area. Detailed design will consider the minimisation of construction impacts.

Once operational, the proposal would have long term positive impacts on access and connectivity for local and regional communities, business, and industry. The proposal would see a reduction in congestion in the Lithgow to Hartley area and improve infrastructure for future traffic demands, particularly at intersections. The proposed increase in the number of lanes on the Great Western Highway would allow for traffic to flow smoothly, and in turn reduce travel time for motorists

travelling along the highway. When considered with other upgrades to the Great Western Highway planned between Katoomba and Lithgow, it is expected that motorists would experience a reduction in travel time of up to 10 minutes. In addition to through traffic time savings, separating long distance and heavy vehicles from local traffic, pedestrians and cyclists will improve road safety by improving local connections via the service roads while limiting the need for locals to turn into high speed traffic travelling along the new Great Western Highway.

Submission number(s)

144

Issue description

The respondent states that there are 31 local heritage items within the study area, 28 of which would be impacted by the proposal through either direct (physical), indirect (visual), indirect (vibration) or archaeological impacts. Of these, the respondent notes that there would be a major impact to the heritage significance to five items, a moderate impact to one item, a minor impact to eight items and a negligible impact to 14.

Response

Section 6.5 and Appendix H of the REF assesses the proposal's impacts on non-Aboriginal heritage. Heritage is a core consideration of the design development process and route options were assessed against their potential heritage impacts. Transport acknowledges that the proposal will have a major impact to four heritage items, a moderate impact to four heritage items, and a negligible or minor impact to 23 heritage items as summarised in Section 6.5.3 of the REF. Overall, given the constraints of the Hartley Valley and the incredibly rich heritage landscape along the Great Western Highway, the proposal achieves desirable outcomes by avoiding or mitigating significant impacts to the heritage items within the study area.

The overall cumulative impact to historical heritage sites within the study area from the proposal is assessed to be minor. Although the route has historically seen modifications and alignments over time in response to changes in technology and safety standards, these changes were generally minor and/or incremental in nature. There have been no major realignments of the Great Western Highway in recent decades, with the exception of the safety upgrades previously completed in the Forty Bends area beneath Hassans Walls. As summarised in Section 6.5.4 of the REF and restated in Section 6.2 of this submissions report, management and mitigation measures will be implemented to address impacts on non-Aboriginal heritage based on the impact type and level. These include but are not limited to archival recording (Safeguard NH13), archaeological test excavation (Safeguard NH15), landscaping and sympathetic plantings (Safeguard NH11), monitoring of ground disturbance works (Safeguard NH16) and engagement of subject matter experts (such as heritage structural engineer and an arborist) where appropriate.

Submission number(s)

145

Issue description

The respondent is concerned about construction impacts on non-Aboriginal heritage along the River Lett.

Response

Section 6.5 and Appendix H of the REF assesses the proposal's impacts on non-Aboriginal heritage. Transport acknowledges that construction activities associated with the proposal have the potential to directly and indirectly impact on heritage items within the construction footprint including demolition/destruction of items, vibration impacts, and works within the heritage curtilage (refer to Tables 6-71 to 6-74 in the REF). As summarised in Section 6.5.4 of the REF, safeguards and management measures will be implemented to address these impacts based on the impact type and level. Safeguards will include but is not limited to archival recording (Safeguard NH13), archaeological test excavation (Safeguard NH15), landscaping and sympathetic plantings (Safeguard NH11), monitoring of ground disturbance works (Safeguard NH16) and engagement of subject matter experts (such as heritage structural engineer and an arborist) where appropriate.

Submission number(s)

23, 36, 144

Issue description

Three respondents state that the rest areas are not suitable for the Hartley Valley due to its important heritage value, noting the listing of the Hartley Valley Landscape Character Area on the National Trust Register. One respondent notes that the rest areas are located at the crossing of two historically significant routes - Mitchell's road and William Cox's original road. It is suggested that other locations within 20 kilometres would be more suited for the proposed rest areas.

Response

Transport acknowledges the community's opposition to the Hartley Valley rest areas. However, as noted in Section 2.3.4 of this submissions report, the rest areas are a crucial road safety measure, and must remain in the upgrade design. During the selection of the rest area locations a number of potential sites were identified. The proposed rest area locations were identified as candidate locations due to their location in terms of distance from other rest areas, the availability of suitable land within the road reserve and the lack of locations in the built-up area of the Blue Mountains.

While the rest areas cannot be moved for the reasons above, Transport appreciate the community's concerns and are continuing to look at improvements to the design to reduce the visual and noise impacts. Transport have also added facilities for light and recreational vehicles so the rest areas can benefit all road users.

The new design has been set lower into the landscape and Transport are developing the urban design further to include:

- Picnic table shelters, lawns and native tree plantings to provide a park-like atmosphere
- Paths linking the parking areas with the picnic shelters and toilet block
- Tree planting in the carpark to provide shade for vehicles
- Plantings to mark the entry to the rest area
- Information boards to showcase the unique heritage of the Hartley Valley.

Further safeguards and management measures outlined in Section 6.2 of this submissions report take the rest areas into consideration.

As noted above, the Hartley Valley National Heritage List (NHL) nomination is no longer valid (refer to Section 3.0 footnote in Appendix H of the REF) and it has not been considered further in the assessment. Although the Hartley Valley NHL nomination is no longer valid, heritage is a core

consideration of the design development process and route options were assessed against their potential heritage impacts.

Transport continues working towards the preservation and recording of the history of the Great Western Highway. Transport has engaged a specialist to develop a thematic framework with the heritage items along the entire Great Western Highway Upgrade Program to be incorporated into the Urban Design Plan. Travellers will be able to stop and learn about both the Aboriginal and non-Aboriginal history of the Great Western Highway.

Submission number(s)

11

Issue description

The respondent questioned the heritage value of some of the existing buildings.

Response

Non-Aboriginal heritage impacts are summarised in Section 6.5 and Appendix H of the REF. The assessment methodology addresses non-Aboriginal (historical) heritage items, conservation areas and historical archaeology in accordance with the Heritage NSW guidelines, the Australia International Council on Monuments and Sites (ICOMOS) Charter for Places of Cultural Significance (Burra Charter), and the Transport Heritage Guidelines. The field survey of the proposal area was carried out by Transport's heritage specialists. The desktop assessment utilised known heritage registers and databases including World Heritage List (WHL), National Heritage List (NHL), Commonwealth Heritage List (CHL), State Heritage Register and Inventory (SHR and SHI), Section 170 Heritage and Conservation Registers (S170), Lithgow Local Environmental Plan 2014 (LEP), and Register of the National Estate (RNE).

Submission number(s)

12

Issue description

The respondent requests that both Fern Hill (non-Aboriginal heritage) and the site of Yellow Box trees (biodiversity) be treated similarly.

Response

In accordance with the Section 5.5 of the EP&A Act, Transport has an obligation to examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment as a result of the proposal. The REF prepared for the proposal examined both non-Aboriginal heritage and biodiversity in accordance with best practice guidelines for their discipline. The safeguards and management measures presented in Section 6.2 of this submissions report will be implemented to minimise and mitigate impacts as required.

Submission number(s)

15

Issue description

The respondent recounts the local history of the area and their property and suggests that there are remnants of sandstone walls which may be of heritage significance.

Response

The potential heritage significance of the stone feature and quarry at the respondent's property are assessed in the Addendum Non-Aboriginal Heritage Report (Appendix C of this submissions report). The stone feature has been determined to have historic significance for potential association with the historic Bowenfels township. It is also of social importance for its importance to the local community and has good research potential as it is completely undocumented. Given the significance assessment, Transport will treat this element as a potential heritage feature.

As the stone feature is located within the acquisition area it is assumed that no ground works are proposed in this area. However, if any ground works are proposed that will disturb this potential heritage feature this will be considered a direct impact and will need to be managed accordingly. For an archaeological impact comprising a ground disturbance in an area of moderate archaeological potential, Safeguard NH16 applies:

- Test excavation under a s140 permit – an Excavation permit under Section 139(4) of the Heritage Act
- Where test excavations are proposed, an archaeological research design and methodology must be prepared in accordance with Archaeological Assessments: Archaeological Assessment Guidelines (NSW heritage Office 1996a).

Given the stone feature also inspected, there is the potential that this stone originated from this quarry. However, as this is located outside of the construction footprint it is not considered further in this assessment.

Submission number(s)

25, 29, 36, 46, 57, 113, 119, 125

Issue description

Several respondents are concerned about the impact of the proposal on the Historic Hartley Village, including:

- Concerns about the impact of the proposal on the foundations of heritage buildings
- A motorway in close proximity to this cultural and tourism asset is inappropriate
- Requests for the Hartley Historic Village to be preserved.

Response

A robust options assessment was carried out to determine the best route given the constraints, particularly in relation to impacts on heritage (refer to Section 2 of the REF). This proposal was chosen as it had the least impacts on heritage and the realignment was designed to avoid the heritage buildings in the Hartley Historic Village.

To highlight landscapes of heritage in the Hartley Valley, Transport is currently in the process of developing a CIS. Transport has engaged consultants to provide non-Aboriginal and Aboriginal heritage interpretation to be incorporated into the Urban Design Plan.

Signage will be provided for all exits and historical areas as a part of the Urban Design Plan developed for the proposal, however these would be an enhancement to the existing environment and not as a mitigation to any impacts as a result of the proposal.

As summarised in Section 6.2 of this submissions report, management measures will include dilapidation surveys for all heritage structures within, or in close proximity to, the construction footprint in order to establish their level of sensitivity to vibration impacts and those structures deemed to be sensitive will require vibration monitoring during construction (Safeguards NH12 and NH13). Where a heritage item is deemed sensitive to vibration impacts, the more stringent German Standard guideline values (DIN 4150) should be followed when assessing minimum safe distances and determining allowable plant and its maximum vibration level (Safeguard NH14). This may require a greater safety buffer to be maintained between the heritage item and a particular vibration-intensive construction equipment.

Submission number(s)

125

Issue description

The respondent expresses opposition to the extensive interchange proposed to be built between Coxs River Road and Baaners Lane due to the impacts on heritage buildings. The respondent states that this will result in the fragmentation of the heritage buildings Harp of Erin, Ambermere and Billesdene Grange.

Response

A robust options assessment was carried out to determine the best route given the constraints, particularly in relation to impacts on heritage (refer to Section 2 of the REF). This proposal was chosen as it had the least impacts on heritage and the realignment was designed to avoid the heritage buildings in the Historic Hartley Village.

To highlight landscapes of heritage in the Hartley Valley, Transport is currently in the process of developing a CIS to be incorporated into the Urban Design Plan. Transport has engaged consultants to provide non-Aboriginal and Aboriginal heritage interpretation and one-on-one consultation with community stakeholders is currently being carried out as a part of development of the CIS.

As summarised in Section 6.2 of this submissions report, management measures will include dilapidation surveys for all heritage structures within, or in close proximity to, the construction footprint in order to establish their level of sensitivity to vibration impacts and those structures deemed to be sensitive will require vibration monitoring during construction (Safeguards NH12 and NH13). Where a heritage item is deemed sensitive to vibration impacts, the more stringent German Standard guideline values (DIN 4150) should be followed when assessing minimum safe distances and determining allowable plant and its maximum vibration level (Safeguard NH14). This may require a greater safety buffer to be maintained between the heritage item and a particular vibration-intensive construction equipment.

Submission number(s)

129

Issue description

The respondent suggests an alternative option must be found to protect the heritage court house.

Response

Transport acknowledges that the proposed works will have indirect visual impacts on the heritage courthouse, which is located within the Hartley Historic Village. To minimise visual impacts, urban design principles will be incorporated into the detailed design to integrate the proposal within the surrounding rural landscape as per Safeguard LV02 in Section 6.2 of this submissions report. This may include, but is not limited to, minimising vegetation clearing and maximising revegetation and planting opportunities, particularly in high sensitivity areas where screening is required

Submission number(s)

115, 145

Issue description

The respondent is concerned about the old highway bridge over the River Lett which has fallen into disrepair and neglect. The respondent states they questioned Transport about what will happen to this bridge as it is in close proximity to the construction footprint, yet they did not receive a clear response. The respondent requires reassurance the bridge will not be demolished and if it is to be impacted by the construction works then precautions will be taken to preserve this important heritage item.

Response

Transport acknowledges that the bridge over the River Lett is of local heritage and aesthetic significance. As discussed in Section 6.5.1.3 of the Technical working paper – non-Aboriginal heritage (Appendix H of the REF), Transport acknowledges the proposed works will be a major direct (physical) impact and major indirect (visual) impact to the heritage item, and the bridge is considered sensitive to vibration impacts during construction due to its dilapidated state. As per environmental safeguard NH12 in Section 6.5.4 of the REF, a dilapidation survey will be completed to determine the vibration risks specific to the heritage item and what management and mitigation measures are required. These management and mitigation measures will be put in place prior to construction works in order to ensure any potential vibration impacts to the built heritage fabric are managed appropriately. An archival recording of the heritage item will also be carried out, in accordance with the guidelines *Photographic Recording of Heritage Items Using Film or Digital Capture* (Heritage Council of NSW 2006) (Safeguard NH05).

Submission number(s)

131, 132

Issue description

Two respondents disapprove of signposts highlighting local attractions being used as mitigation for the impacts to heritage.

Response

Transport is committed to the management of non-Aboriginal heritage and mitigation of impacts as a result of the proposal (as detailed in the safeguards presented in Section 6.2 of this submissions report). Signage will be provided for all exits and historical areas as a part of the Urban Design Strategy developed for the proposal, however these would be an enhancement to the existing environment and not as a mitigation to any impacts as a result of the proposal.

Transport recognises the rich cultural heritage present in the Hartley Valley and, as noted in responses above, is currently developing a CIS that will be incorporated into the Urban Design Plan to highlight landscapes of heritage in the Hartley Valley. Consultants have been engaged to provide non-Aboriginal and Aboriginal heritage interpretation to enhance special values of each heritage place in consultation with community stakeholders.

2.10.2 National Trust listing

Submission number(s)

23, 31, 35, 37, 38, 46, 53, 55, 56, 58, 59, 61, 79, 80, 86, 87, 90, 91, 95, 96, 102, 103, 105, 107, 114, 115, 116, 124, 138, 144, 147, 169

Issue description

Several respondents stated that the Hartley Valley Landscape Conservation Area is listed on the National Trust Register, which highlights the historical, geological and ecological significance of the area.

Response

As noted above, heritage is a core consideration of the design development process and route options were assessed against their potential heritage impacts. Transport acknowledges the importance of heritage to the community.

As the Hartley Valley National Heritage List (NHL) nomination is no longer valid (refer to Section 3.0 footnote in Appendix H of the REF) it has not been considered further in this assessment. The inventory sheet for the National Trust (NT) item Hartley Valley (Cox's River) Landscape Conservation Area cannot currently be accessed but it is presumed that the NHL nomination was based on the NT listing and that they contain the same information. It has also not been considered further in this assessment. Although the Hartley Valley NHL nomination is no longer valid, heritage is a core consideration of the design development process and route options were assessed against their potential heritage impacts. Overall, given the constraints of the Hartley Valley and the incredibly rich heritage landscape along the GWH, the proposal achieves desirable outcomes by avoiding or mitigating impacts to the majority of heritage items within the construction footprint.

Where there will be impacts on non-Aboriginal heritage, safeguards and management measures will be implemented to address these impacts based on the impact type and level as summarised in Section 6.2 of this submissions report. These include but are not limited to archival recording (Safeguard NH13), archaeological test excavation (Safeguard NH15), landscaping and sympathetic plantings (Safeguard NH11), monitoring of ground disturbance works (Safeguard NH16) and engagement of subject matter experts (such as heritage structural engineer and an arborist) where appropriate.

In addition to these safeguards and management measures, Transport is developing a CIS that will be incorporated into the Urban Design Plan to highlight landscapes of heritage in the Hartley Valley.

Submission number(s)

23

Issue description

The respondent acknowledged the heritage significance of the area, noting:

- The Hartley Valley has been nominated twice for listing as a Heritage Place under the Environment Protection and Biodiversity Conservation Act 1999
- The previous heritage report (2008) highlighted more than 100 heritage sites in the Hartley Valley
- The significance of the valley itself, not just the items within it
- The combination of Aboriginal and European heritage in once place.

Response

The Hartley Valley landscape conservation area is not considered as a standalone heritage item in the REF as it is not listed on any statutory register. However, Transport has identified a number of heritage items throughout the Hartley Valley and each item was assessed on their own merit. Transport understands the importance of the Hartley Valley and the highway upgrade has been designed to be as sympathetic to the natural landscape as much as possible. The evidence of this can be found in the Urban Design and Landscape Character and Visual Impact technical paper.

Transport is also currently developing a CIS to be integrated in the Urban Design Plan for the proposal. This will provide non-Aboriginal heritage interpretation to enhance special values of each heritage place.

The National Heritage List contains a nomination which covers the entirety of the Hartley Valley, however this nomination is currently listed as 'ineligible for PPAL' and is considered non-existent unless it is resubmitted for consideration (see Section 3 of the Non-Aboriginal Heritage Assessment Report).

Transport will continue to work with key stakeholders during the detailed design phase in order to avoiding, minimise and mitigate the impacts to Aboriginal and Non-Aboriginal Heritage.

Submission number(s)

144

Issue description

The respondent is concerned that although the REF and its related Technical Studies refer to the numerous heritage listings and reports that have previously been prepared for the place, these heritage assessments do not refer to the Trust's listing of the Hartley Valley landscape. The respondent notes that they have:

- Responded to a request from the technical study consultants on the 15 June 2021
- Supplied an excel of sites listed by the National Trust in the vicinity of the project (which included the Hartley Valley Landscape Conservation Area)
- Supplied consultants with a copy of the listing card for the Hartley Valley Landscape Conservation Area.

The respondent notes that this information is not acknowledged in the technical studies.

Response

As noted above, listing of the Hartley Valley (Cox's River) Landscape Conservation Area under the National Trust Register is acknowledged in Section 3.2 of Appendix H of the REF. Further assessment of the listing was not included in the Technical working paper – Non-Aboriginal heritage as listing under the National Trust Register is not statutory and does not trigger assessment under Heritage NSW guidelines, the Burra Charter, the Transport heritage guidelines and relevant Commonwealth heritage guidelines.

Further consideration of the information provided is discussed in Section 4.2.8.

2.10.3 Vibration impacts to heritage structures

Submission number(s)

23

Issue description

The respondent states that Transport must assess the vibration impacts on building structures, heritage structures and aboriginal artefacts.

Response

As outlined in Section 6.2 of this submissions report, several safeguards would be put in place to minimise potential vibration impacts on heritage items. Safeguard NH12 and NH13 state that further dilapidation surveys should be completed for sensitive heritage items. Vibration monitoring will be carried out on sensitive heritage items for at least the period of construction. Monitoring will continue at least 12 months after the completion of works to determine if ongoing impacts are occurring i.e. identify any operational damage attributable to the proposal. Surfacing and construction methods in proximity to sensitive heritage items should be in accordance with the Transport criteria for construction adjacent to sensitive heritage buildings.

The dilapidation report for each cemetery will involve archival recording/photographs showing the present state of monuments, followed by an assessment of any tilting of headstones or cracking of slabs that may be attributable to roadworks.

Transport acknowledges that construction of the deep cut through River Lett Hill will require a significant amount of blasting to remove the large volume of hard rock (refer to Section 6.3 of the REF). Blasting is proposed to occur along River Lett Hill to Forty Bends section of the proposal. Figure 6-12 of the REF shows the extent of predicted blasting impacts for the proposal. It is acknowledged that thirteen non-Aboriginal heritage items or areas are within 340 metres of the proposed blasting location. Heritage listed buildings and structures would be considered on a case-by-case basis but as noted in BS 7385 would not be assumed to be more sensitive to vibration, unless structurally unsound. As per Safeguard NV10, impacts associated with blasting would be managed through the following:

- A blast management plan would be prepared prior to the start of blasting
- Trial blasts would be carried out when blasting is proposed to occur within the minimum working distances
- Monitoring of overpressure and vibration levels would be carried out at the potentially most affected receivers for each blast
- Notification of all potential affected receivers would occur at least 24 hours prior to blasting.

As summarised in Section 6.2 of this submissions report, management recommendations have been developed in consultation with RAPs to avoid impacts where possible and where impacts are unavoidable, to effectively mitigate them. Management of Aboriginal sites would include protection and salvage measures (Safeguard AH09 and AH07), development of a curation policy for salvaged Aboriginal objects (Safeguard AH08) and procedures for unexpected discovery of Aboriginal objects (Safeguard AH10). As per environmental safeguard AH06 in Section 6.2 of this submissions report, temporary fencing will be placed on the boundary of listed Aboriginal heritage sites to mitigate construction impacts (see Table 6-62 of the REF). As per Safeguard AH01 in Section 6.2 of this submissions report, site specific management measures will be described in an AHMP that will form part of the CEMP developed for the proposal.

Submission number(s)

144

Issue description

The respondent states that two State Heritage Register listed heritage items will be impacted by the proposal and that Fernhill and the Hartley Historic Site may be susceptible to vibration impacts during construction.

Response

Transport acknowledges that the proposed works will have an overall moderate impact on Hartley Historic Village and Fernhill (refer to Table 6-73 of the REF), and they have been identified as within the minimum working distance for heritage items (i.e. 44 m), refer to Figure 6-10 in the REF and Figure 3-3. As summarised in Section 6.2 of this submissions report, safeguards and management measures will include earthworks to blend the required batter slopes into existing topography where possible (Safeguard NH10), dilapidation reports to determine the sensitivity of buildings in Hartley Historic Village and Fernhill to vibration impacts during construction or operation (Safeguard NH13), and test excavation or monitoring of ground disturbance works by an appropriately qualified archaeologist (Safeguard NH15).

2.10.4 Adequacy of assessment

Submission number(s)

123

Issue description

The respondent states that there are 50 European heritage sites in the construction footprint.

Response

A review of previous heritage studies, aerial imagery, a search of relevant heritage registers and field visits identified 36 listed heritage items and fourteen locations of heritage potential (including archaeological potential) within the vicinity of the proposal (refer to Section 6.5 and Appendix H of the REF). Following the desktop assessment, this was refined to those situated within or adjacent to the construction footprint with the potential to be impacted and those items were assessed further.

2.11 Soils and surface water

Submission number (s)

5, 23, 35, 47, 58, 65, 76, 91, 102, 106, 107, 119, 134, 145

Issue description

Several respondents raised the following issues regarding water quality impacts:

- Concerns about the water quality impacts of the proposal on local waterways and surface water in Hartley Valley, including the River Lett and the Hartley River
- Request for all waterways to be protected from pollution, contamination, and degradation
- Concerns that the proposal may negatively impact headwater collections to the south of the highway that feed into the Cox's River and Sydney Drinking water catchment
- Concerns about wastewater run-off.

Response

As described in Section 3.2.3 in Appendix I of the REF, historic water quality data for the River Lett indicates that water quality is generally good and complies with the guidelines for protection of slightly disturbed upland river aquatic ecosystems for the majority of indicators. Water quality data was not available for Hartley River; however, water quality monitoring of waterways within the construction footprint will be carried out prior to construction and data will be reviewed to inform detailed design, in accordance with Safeguard SW06 in Section 6.2 of this submissions report.

Construction and operation of the proposal presents a risk to downstream surface water quality if unmanaged as discussed in Section 6.6.3 of the REF. Potential water quality impacts within waterways associated with construction of the proposal include increased turbidity from sedimentation, which can reduce visual amenity, and increase nutrients which can lead to algal blooms. With the application of safeguards such as the development and implementation of a CSWMP, ESCPs and emergency spill procedures, construction of the proposal will have minimal impact on the existing water quality of the area (see Safeguards SW01 to SW05 in Section 6.2 of this submissions report).

During the operational phase of the proposal, the site will be completely stabilised, all roads and bridges will be sealed, cleared areas will be landscaped and scour protection will be installed. There will be no exposed topsoils and therefore little or no risk of soil erosion and subsequent transport of sediment into downstream waterways. Therefore, water quality risks during operation relate to increased pollutant deposition from increased traffic loading due to improved road conditions which are washed to downstream waterways following rainfall, accidental spills and operational basin discharges.

The proposal is located in the mid Coxs River sub-catchment in Hawkesbury-Nepean Catchment region which is part of the Sydney Drinking Water Catchment as it flows into the Warragamba Dam. As the proposal is located within the Sydney Drinking Water Catchment it is subject to the Sydney Drinking Water SEPP, which requires the approver of a project to consider whether the proposal will have a neutral or beneficial effect (NorBE) on water quality. This was assessed using the 'Neutral or Beneficial Effect on Water Quality Assessment Tools' (the NorBE tool) which determined that the proposal will have a neutral or beneficial impact on water quality with the installation of water quality basins as described in Section 3.1 of the REF which requires that pollutant loads are equal to or less than existing conditions. The assessment demonstrated that, through the use of water quality basins the proposal will achieve 'NorBE'. As required by Safeguard SW03, a further NorBE assessment will

be carried out during detailed design to confirm the location, size and type of water quality basins required for operation of the proposal. This will include, but not be limited to, an assessment of the following to demonstrate achievement of NorBE:

- the quantity of runoff associated with the construction and operational phase
- the quality of runoff proposed to be discharged to existing waterways through cross and longitudinal drainage.

Results of the NorBE will be taken into consideration during detailed design and quality monitoring will be carried out for the River Lett and the Coxs River as required.

Construction phase sediment basins and permanent dry biofiltration basins and a wet basins are proposed to ensure runoff from the proposal meets the relevant water quality criteria (refer to Section 3.1 of the REF). Sediment basins and water quality basins will capture and treat run off before discharge to receiving waterways, in accordance with the CSWMP (Safeguard SW01) and the NorBE requirements (Safeguard SW03).

Water quality treatment for local roads and access ramps with lower traffic volumes is not warranted due to minimal pollutant loads; however, the use of measures such as vegetated swales will be considered where feasible.

Submission number (s)

25, 68, 114, 120, 145

Issue description

Several respondents raised the following issues:

- The proposed service road connect Jenolan Caves Road will run close to the River Lett and will require major earthworks. Even if measures are taken to minimise impacts to the river, there will still be impacts, and these cannot be accurately predicted
- Concerns about the River Lett due to sedimentation and construction of a retaining wall in close proximity.

Response

Potential water quality impacts to the River Lett and Coxs River, which are in proximity to Jenolan Caves Road, associated with construction of the proposal described in Section 6.6.3 and Table 6-82 of the REF. These include increased turbidity from sedimentation, which can reduce visual amenity, and increased nutrients which can lead to algal blooms. Safeguards to manage these impacts include the development and implementation of a CSWMP (Safeguard SW01) and engagement of a soil conservation specialist (Safeguard SW02). These will be developed as design for the proposal is finalised and there is more certainty about potential impacts. The CSWMP will be subject to ongoing review, in accordance with the requirements of the Blue Book (Landcom, 2004) and will be amended in response to any observed changes to water quality in the River Lett or Coxs River as a result of water quality monitoring carried out in accordance with Safeguard SW04 in Section 6.2 of this submissions report.

Submission number (s)

89, 117

Issue description

Two respondents expressed concerns about the surface water impacts associated with the proposed rest areas. Concerns included the impacts of car idling, parked vehicles and rubbish at the proposed rest areas and the potential for petrochemical pollution of run off entering the water catchment.

Response

The two rest areas in Hartley Valley included as part of the proposal were included in the assessment of impacts within the hydrology and hydraulics assessment (Appendix K of the REF) and soil and surface water quality assessment (Appendix I of the REF). The rest areas form part of the proposal (refer to Section 3.1 of the REF) and were considered in the Hydrology and hydraulic assessment (refer to Section 6.8 and Appendix K of the REF). As described in Section 3.1 of the REF, permanent dry biofiltration basins and a wet basin are proposed to ensure runoff from the rest stops meets the relevant water quality criteria before being discharged to receiving waters.

To reduce litter entering waterways, rubbish bins will be placed at both rest areas. Gross pollutant traps will also be considered for inclusion during detailed design to collect rubbish and prevent it from entering waterways.

As part of the NorBE Assessment carried out in the REF, petrochemical pollution was identified as a potential impact to water quality during construction due to increased chemicals, oils and grease, petroleum hydrocarbons and drilling fluids from accidental spills and leaks from vehicles. However, water quality modelling (refer to section 5.4.3.3 in Appendix I of the REF) carried out for the proposal shows that with the implementation of the proposed mitigation measures and design features such as vegetated swales, water quality wet basins and dry biofiltration basins, there will be a decrease in the pollutant loads when compared with the current Great Western Highway.

Submission number (s)

57

Issue description

The respondent believes that long term planning should be carried out to reduce loss of water and improve retention.

Response

An assessment of changes to stormwater quantity is presented in Appendix K of the REF, which determined that the proposal will not result in a loss of water in the area. A water balance assessment will be carried out in accordance with Safeguard SW05 in Section 6.2 of this submissions report to determine potential impacts to farm dams within 500 metres downstream of the proposal.

During construction of the proposal, water reuse on site will be maximised through the development and implementation of a water reuse strategy (Safeguard SW04).

Submission number (s)

7, 29

Issue description

One respondent noted that impacts to surface water will be managed by engineered structures and suggests the proposal should utilise natural filtration, detention, and levies. One respondent noted that there is a lack of rain gardens for surface water runoff in the proposal design.

Response

The proposal has been designed to achieve a neutral or beneficial effect (NorBE) effect on waterways in accordance with the requirements of the Sydney Drinking Water SEPP. The NorBE assessment is described in Section 5.4.3.3 of Appendix I of the REF.

As described in Section 5.4.3 of Appendix I, the proposal will use temporary sediment basins during construction to capture and treat runoff from all disturbed areas of the proposal before discharging into the receiving waterways. During the operational phase, the proposal will construct or convert existing sediment basins to permanent dry basins, with the exception of one location in the Coxs River Road section where a wet basin and the use of vegetated swales may be needed (refer to Tables 5-6 to 5-8 in Appendix I of the REF). Biofiltration basins use vegetation as a natural filter and a porous filter medium to achieve the water quality requirements.

The proposed permanent water quality controls are based on the principles of Water Sensitive Urban Design and include biofiltration basins and vegetated swales that provide optimum water quality treatment for the surface runoff that is generated from the proposed road pavement. Biofiltration basins provide physical and biological treatment through the engineered filtration layers with carefully selected particle sizes filters and saturated hydraulic conductivity (permeability) and the topsoil/vegetation layer. A biofiltration basin uses the same principles as a much smaller raingarden with similar results per unit area. The proposed vegetation of the biofiltration basins and swales has been carefully selected by the landscape architects to suit the local climatic conditions.

As described in Section 6.6.3 of the REF, vegetated swales will also be considered for local roads during detailed design. These are shallow stormwater channels that are densely planted with a variety of grasses, shrubs, and/or trees designed to slow, filter, and infiltrate stormwater runoff.

A further NorBE assessment will be carried out to confirm water treatment requirements during operation of the proposal as per Safeguard SW03 in Section 6.2 of this submissions report.

2.12 Groundwater

Submission number (s)

58, 114

Issue description

Two respondents expressed concern that groundwater reserves will be negatively impacted by the proposal.

Response

As described in Section 6.7 and Appendix J of the REF, the potential effects of the proposal on groundwater were assessed through a combination of desktop review and analysis, groundwater modelling and a qualitative assessment of potential cumulative groundwater impacts. The analysis determined that material changes of baseflows to water courses due to groundwater level drawdown will not occur and impacts associated with discharge of groundwater to receiving environments were considered unlikely to occur. As such, impacts on groundwater dependent ecosystems as a result of the proposal are not predicted (see Section 5.5 of Appendix J).

Safeguards to mitigate potential impacts to groundwater levels, quantity and quality resulting from construction and operation of the proposal were identified and are outlined in Section 6.2 of this submissions report. This includes monitoring of groundwater levels during construction of the proposal in accordance with Safeguard GW02.

Submission number (s)

9

Issue description

The respondent noted the basement of their property is subject to inflows of groundwater following rain events, which they hypothesize is a result of the previous highway realignment. The respondent queries whether the groundwater would be diverted away from the building with the proposal.

Response

Potential impacts are described in Section 6.7.3 and Section 5.5 of Appendix J of the REF. For the section in proximity to the respondent's property, the calculated groundwater inflow rates are low and the associated drawdown extents are sufficiently small that changes to groundwater flow regimes would be localised to the vicinity of the proposal, with no material changes to regional groundwater flow conditions likely. The proposal would be designed to prevent groundwater from entering properties and further assessment would be carried out during detailed design in accordance with Safeguard GW01 in Section 6.2 of this submissions report.

Submission number (s)

89

Issue description

The respondent suggests that an increase in impervious surfaces will negatively affect groundwater systems.

Response

As stated above, predicted impacts to groundwater would be small and localised. Impacts to groundwater quality would be monitored during construction and operation in accordance with Safeguards GW01 and GW02 (refer to Section 6.2 of this submissions report) to identify potential impacts to groundwater.

2.13 Hydrology and flooding

Submission number(s)

6

Issue description

The respondent notes that the proposal has extensively considered flood mitigation and waterway protection and will reduce flood risk into the future.

Response

Transport acknowledges the respondent's support of the hydrology and flooding assessment in Section 6.8 and Appendix K of the REF.

As described in Section 6.8.3 and Appendix K of the REF, potential flooding impacts associated with the proposal would be confined to River Lett (including Boxes Creek) and Rosedale Creek. The results of the flooding analysis showed that most of the predicted impacts would be localised to waterways and pre-existing flooded areas. Flood level increases would be within the current industry accepted tolerances for the land uses surrounding the proposal.

Submission number(s)

10

Issue description

The respondent suggests drainage at the Old Bathurst Road intersection is poor and has resulted in flooding to three properties. The respondent suggests this will be worsened by the proposal and should be addressed during the planning stages.

Response

As stated in Section 3.2 of the REF, provision of cross and longitudinal drainage would be included as part of the proposal. This would include upgrades to existing pipes and culverts where feasible, as well as new drainage infrastructure for new sections of road, provision of scour protection and pit and pipe drainage where gutters are proposed. Structural culverts are described in Table 3 -7 of the REF. Drainage outlets would discharge to open channels, water quality basins or existing waterways depending on the quality of the runoff. Additionally, as per Safeguard HF01 in Section 6.2 of this submissions report, all cross-drainage structures including culverts and bridges would be constructed to cater for the 100 year ARI local and regional storm events to minimise upstream afflux.

Submission number(s)

76, 91, 114

Issue description

Three respondents raise concerns about road surface flooding.

Response

Section 6.8 and Appendix K of the REF outline the potential impacts of the proposal on flooding. It is acknowledged that the increase in impervious surfaces would lead to increased run off, however the proposal and associated drainage structures would be designed to accommodate this increase and therefore the resulting flooding impacts would be minor and within the industry-accepted range for the land types surrounding the proposal. As stated above, the flood modelling indicates that flooding associated with the proposal would generally be confined to River Lett (including Boxes Creek) and Rosedale Creek and be limited to localised areas that are already flooded in present day conditions. This is due to the relatively steep terrain which acts to confine predicted increases in flooding due to the proposal to minor increases.

Submission number(s)

102

Issue description

The respondent suggests that flooding during a La Niña year would see extreme flooding in the Hartley Valley.

Response

The proposal design for water management has been designed to accommodate the one per cent Annual Exceedance Probability (AEP) storm (100 year Average Recurrence Interval (ARI) storm event), which takes into account La Niña climate scenarios up to this event. The Hydrology and hydraulic assessment (Appendix K of the REF) modelled the flooding impacts of a range of storm events that would capture the climatic conditions experienced during a La Niña event, ranging from frequent (the ten percent AEP) to extreme (the Probable Maximum Flood). A climate change storm was modelled as per Transport's guideline *Climate Change Adaptation for the Road Network*. The future one percent AEP storm was amplified to the present day 0.2 per cent AEP storm (or 500 year ARI storm) as the climate change scenario.

As discussed in Section 6.8.3 of the REF, flooding events modelled under the one per cent AEP (or 100 year ARI storm) are expected to have a negligible impact on the study area. Additionally, flood level results for River Lett show that the nominated climate change event (500 year ARI storm) may result in an overall flood level increase of about 700 millimetres in the river attributable to the proposal. The potential flood level increase due to the proposal under the nominated climate change scenario (500 year ARI storm) would be similar in pattern to the one per cent AEP but amplified along the river to about twice the length (see Appendix C of Appendix F of the REF) and would not alter the potential flood risk associated with the proposal.

Submission number(s)

79, 115

Issue description

Two respondents suggest the sediment ponds are insufficient as they believe that recent flooding would have overflowed the sediment ponds into the river system. Further, the respondents believe that stormwater basins to collect runoff are not a viable solution as overflows will spill into the River Lett.

Response

Transport acknowledges that the increase in sealed surfaces will result in an increase in stormwater runoff, which if left unmitigated could negatively impact local rivers. As identified in Section 3.2.3 of the REF, in addition to other erosion and sedimentation control measures, construction phase sediment basins are proposed to capture and treat run off from disturbed areas to ensure runoff meets the relevant water quality criteria before being discharged to receiving waterways. Sediment basins are generally considered the final control to be used in a treatment train, with the primary focus on prevention of erosion (i.e. minimising the area of disturbed soils and stabilising disturbed soils). A CSWMP will be prepared for the proposal in accordance with Safeguard SW01 (refer to Section 6.2 of this submissions report) that will outline the measures to manage water quality impacts associated with construction work and would include measures to minimise erosion as well as the installation and management of sediment basins.

Sediment basins would be designed in accordance with *Managing Urban Stormwater: Soils and Construction* (Landcom, 2004) (the Blue Book) based on the soil and water characteristics of the catchment in which the sediment basin is to be located. The size of a basin is based on a specific design storm event (ARI) which varies dependent upon the duration of soil disturbance. Other factors, such as availability of space, may also impact on sediment basin sizing, however, should a basin be smaller than the ideal design storm event, additional upstream control measures would be required to be implemented.

The recommended permanent basins are dry biofiltration basins except at one location in the Coxs River Road section where a wet basin may be needed. Biofiltration basins generally consist of a vegetated basin overlaying a porous filter medium with a drainage pipe at the bottom. Water is directed into the basin where it flows through dense vegetation and temporary ponds on the surface before slowly filtering down through the filter media, which removes the pollutants. Biofiltration basins are designed to release water in high flow events to prevent damage to the vegetation and material within the basin. Overflows from the basins would be released to stormwater systems that have been designed to accommodate the flows.

In accordance with the Blue Book, sediment basins and their outlets are designed to be stable in the peak flow from the design storm event and are designed to release water in events higher than this. Outlets are designed to be stabilised and control the flow of water in storm events greater than the design storm event thus minimising erosion. Basin outlets are also designed to minimise the potential for basin collapse by directing discharge in the event of an uncontrolled discharge, thereby maintain basin integrity.

It is also noted that the CSWMP would also require that pre-rainfall site inspections are carried out to develop additional management controls to minimise erosion during the storm event. Such controls would focus on site stabilisation and clean water diversion.

The hydrology and hydraulic assessment concluded that the proposal (refer to Section 3.1 of the REF) is compliant to the assessment criteria of flood immunity, flood impacts, and climate change risk and would not result in flooding impacts greater than the industry-accepted range for the land use types surrounding the proposal. In particular, it was concluded that the potential impacts of the proposal on the River Lett would be minor and confined to the riverbanks, even under the adopted climate change scenario (refer to Section 6.1 in Appendix K of the REF).

2.14 Landscape character and visual impact

2.14.1 Visual impacts

Submission number(s)

2, 6, 12, 20, 23, 24, 25, 28, 35, 36, 41, 46, 56, 57, 58, 62, 68, 69, 73, 76, 79, 86, 89, 90, 95, 96, 97, 100, 103, 105, 106, 107, 108, 109, 110, 113, 114, 119, 120, 123, 124, 129, 131, 132, 133, 134, 137, 138, 144, 145, 147, 152, 154, 155, 156, 163, 179

Issue description

In summary, several respondents raised the following issues regarding visual impacts:

- Concerns about the negative impacts the proposal will have on landscape character and visual amenity
- Requests for Transport to ensure that landscaping conforms to the natural context of the area. One respondent acknowledges the proposal design has considered this
- Request that the proposal does not negatively impact the aesthetic appeal of Glenroy and Morning View historic properties
- Request for the historical and environmental value of Hartley Valley to be preserved for tourism
- Concerns that the proposal will remove the distinctive charm and character of Little Hartley
- Concerns that the proposal is inconsistent with the residential character of the area
- The proposal represents a massive scar on a picturesque and historically significant part of our early colonial history
- Request for greater consideration to be given to limiting the visual impacts on Hartley Valley
- Concerns that the proposal is highly visible from all viewpoints
- Concerns regarding the long-term environmental effects of the proposal
- The proposal is not in line with Transport's 'Beyond the Pavement' policy.

Response

Transport acknowledges that there is potential for moderate to high visual impacts from the proposal if the visual impacts are left unmitigated (refer to Section 6.9.3 and Table 6-92 of the REF). However, the overall visual impact of the proposal would be reduced to moderate to moderate-low through the application of the mitigation measures identified in Section 6.2 of this submissions report (refer to Table 6-93 of the REF). Transport further acknowledges and has considered the heritage significance of Hartley Valley in Sections 6.4, 6.9 and Appendices H and L of the REF.

Landscape character and visual impacts are addressed in Section 6.9 and Appendix L of the REF. Section 6.9.2 of the REF and Section 2 of Appendix L provides a contextual analysis of the study area and acknowledges the scenic nature of the landscape which includes rural-residential and native woodland landscape characteristics. The proposal would involve five landscape character zones (LCZs) as identified in Section 6.9.2 of the REF. An assessment of the magnitude of change as a result of the proposal, the sensitivity of the landscape character zones and the overall landscape character impact the proposal is provided in Table 6-92 of the REF.

Transport will continue to work with Council and the local community during the detailed design process and implementation of the Urban Design Strategy. The Strategy, prepared in accordance with

the Urban Design Framework (Roads and Maritime, 2019), will include urban design objectives and principles specific to the proposal as detailed in Section 4 in Appendix L of the REF. The urban design principles set out in Section 4 of Appendix L includes the development of a design that fits with the existing high visual qualities, ecology and character of the Hartley Valley and its setting (Objective 1). It also includes the objective to minimise impacts to the integrity of heritage sites, significant trees, and cultural values of the community within the proposal (Objective 2). Further development of the strategy will directly influence key engineering aspects of the concept road design, including road alignment, typical cross sections and retaining walls.

An Urban Design Plan will be prepared to facilitate an integrated urban design and engineering design outcome for the proposal and will detail the application of the design principles as identified in the REF (Safeguard LV01). The detailed design of the proposal will consider opportunities to reduce the construction footprint, explore the maximisation of vegetation and planting opportunities along the upgraded highway, and ensure residual land is developed to complement the existing landform (Safeguard LV02). Transport will consider at locations where greater visual impacts have been identified, the specification and planting of more mature sized shrubs and trees to help reduce the visual impact upon opening the road since the proposed planting will take a few years (between three and 10 years) to establish at adequate height. As per Safeguard LV03, landscaping planting and maintenance will be in accordance with the Lithgow City Council Weed List and include indigenous species endemic to the area. As described in Section 2 of the REF, the proposal will largely improve the accessibility of towns through increasing the reliability and capacity of the road networks. This will lead to an increased opportunity for tourism in local communities.

The proposal has been designed in line with Transport's *Beyond the Pavement* initiative which advocates for urban design to be integrated into projects right from the initiation phase. The initiative encourages considerations to achieve an integrated context sensitive design and quality infrastructure. The proposal has incorporated improvements to the existing active transport network, consideration of noise walls in design and measures to restore the landscape after construction. One of the key proposal objectives as outlined in Section 2.3.1 of the REF is to be sensitive to the unique environmental and cultural assets along the corridor between Katoomba and Lithgow and enhance the liveability of town centres west of Katoomba.

As described in Section 2 of the REF, the proposal will largely improve the accessibility of towns through increasing the reliability and capacity of the road networks. This will lead to an increased opportunity for tourism in local communities, furthering opportunities for people to appreciate the cultural landscape of the area. Transport further acknowledges and has considered the heritage significance of Hartley Valley in Sections 6.4, 6.9 and Appendices H and L of the REF. As noted above, the significance of the cultural landscape is acknowledged in appendices H and L of the REF.

Submission number(s)

53, 54, 89, 90, 91, 95, 96, 102, 145, 154

Issue description

Several respondents raised the following issues regarding the design of the proposal:

- The proposed overpasses through the valley are massively overengineered for the population concentration in the Hartley Valley
- Request for a simpler design without overpasses to better preserve the landscape of Hartley Valley
- The overpasses will introduce light pollution
- The proposed design with overpasses, dropped roads, ramps, and multiple lanes will have negative visual impacts on Hartley Valley and discourage tourism in the area
- The proposed design will not add any improvements over existing highway and local road connections.

Response

The Urban Design Plan will include design treatments for built elements in accordance with Safeguard LV01 in Section 6.2 of this submissions report. This includes the proposed bridges, which will be simple and streamlined to allow the surrounding landscape character to predominate (see Section 7.2 of Appendix L of the REF). Also considered are the use of fill embankments, which will be minimised particularly in areas with native vegetation on steep slopes. The investigation of opportunities to reduce the bulk of structures will be further considered during detailed design (Safeguard LV02). The proposal aims to address future transport needs and is required to comply with Austroads *Guide to Road Design*. Also, the proposal aims to safely separate local traffic from the high-speed traffic on the highway and improve the active transport infrastructure in the area which presents future tourism opportunities. Overpasses have been incorporated into the design to reduce direct access from local roads.

Temporary and permanent lighting would be designed and implemented with consideration of the need to orientate lighting to minimise light spill and glare impacts on nearby receivers in accordance with Safeguard LV04 in Section 6.2 of this submissions report.

Urban design principles will be applied to incorporate the proposal into the surrounding landscape as per Safeguard LV01 in Section 6.2 of this submissions report. This includes the design objective 3, which aims to retain and maximise the accessibility and connectivity of adjoining existing communities for all users including motorists, public transport users, cyclists, and pedestrians (refer to Section 4.4 in Appendix L of the REF). Once operational, the proposal will reduce congestion, deliver safer, more efficient, and reliable journeys for those travelling in, around and through the Blue Mountains, and better connect communities in the Central West. This will lead to an increased opportunity for tourism in local communities.

Submission number(s)

13

Issue description

The respondent requested that the materials used for the retaining walls are visually attractive, and that landscaping, and planting should aim to enhance the area.

Response

The Urban Design Plan will include design of retaining walls to have a finish that relates to the character of the surrounding landscape in accordance with Safeguard LV01 in Section 6.2 of this submissions report. The recommended finish of each retaining wall is summarised in Table 7-3 in Appendix L of the REF and will be finalised during detailed design. Landscape concept drawings of the retaining walls are provided in Section 7.7 in Appendix L of the REF. Safeguard LV01 has been revised to reflect this as follows:

Safeguard LV01: An Urban Design Plan will be prepared to support the final detailed proposal design and implemented as part of the CEMP.

The Urban Design Plan will present an integrated urban design for the proposal, providing practical detail on the application of design principles and objectives identified in the environmental assessment. The Plan will include design treatments for:

- location and identification of existing vegetation and proposed landscaped areas, including species to be used
- built elements including retaining walls and bridges to ensure that they are consistent with the surrounding environment
- fixtures such as seating, lighting, fencing and signs
- details of the staging of landscape works taking account of related environmental controls such as erosion and sedimentation controls and drainage
- procedures for monitoring and maintaining landscaped or rehabilitated areas.
- The Urban Design Plan will be prepared in accordance with relevant guidelines, including:
- Beyond the Pavement (Transport for NSW, 2020b)
- Landscape and design guideline (Roads and Maritime Services, 2018)
- Bridge Aesthetics (Transport for NSW, 2019).

The detailed design of the proposal will consider opportunities to reduce the construction footprint, explore the maximisation of vegetation and planting opportunities along the upgraded highway, and ensure residual land is developed to complement the existing landform (Safeguard LV02). As per Safeguard LV03 in Section 6.2 of this submissions report, landscaping planting and maintenance will be in accordance with the Lithgow City Council Weed List and include indigenous species endemic to the area.

Submission number(s)

15

Issue description

The respondent states the proposal will negatively impact upon their property's visual appeal. As the proposal will bring the highway closer to their residence the respondent suggests this will intrude on their front garden which is presently visually appealing.

Response

A number of urban design objectives and principles have been developed for this proposal. Objective 2 in particular is to minimise impacts to the integrity of heritage sites, significant trees, and cultural values of the community within the proposal. To align with this objective, Transport will consider the use of borrowed landscapes and the planting of mature trees on private property along the Great Western Highway to assist with visual impact mitigation. The safeguards and management measures that will be in place to address visual impacts of the proposal are outlined in responses above and in Section 6.2 of this submissions report.

Submission number(s)

15

Issue description

The respondent states the roadside landscape will be greatly disturbed during the construction phase and unsightly for the duration of the upgrade process.

Response

Transport acknowledges that the proposal would have some negative visual impacts during the construction phase of the proposal in Section 6.9 of the REF. Measures will be implemented during the construction phase of the proposal to minimise visual impacts as per Safeguard LV05 in Section 6.2 of this submissions report. This will include, but is not limited to, providing suitable barriers to screen views from adjacent areas during construction, screening temporary lighting to reduce unnecessary light spill, and retaining existing trees located within the ancillary facility areas.

Submission number(s)

23

Issue description

The respondent is concerned about the visual impacts for residents in direct view of the proposal, in particular at Baaners Lane and near the rest areas.

Response

Transport acknowledges that the proposed upgrade on Baaners Lane and inclusion of rest areas will have potential visual impacts for residents. The concept design for connectivity between Baaners Lane and Browns Gap Road and the location of the Baaners Lane and Great Western Highway intersection was developed after an options assessment and in consultation with the local community, including the Hartley District Progress Association (refer to Section 2.4.2 of the REF). Where there will

be visual impacts for residents, safeguards and management measures outlined in Section 6.2 of this submissions report will be in place to mitigate them. This includes the development of an Urban Design Plan (Safeguard LV01) which will detail the application of the design objectives identified in Section 2.3.3 of the REF. The detailed design of the proposal will consider opportunities to reduce the construction footprint, explore the maximisation of vegetation and planting opportunities along the upgraded highway, and ensure residual land is developed to complement the existing landform (Safeguard LV02). Refer to Section 6.2 for detailed measures that address the visual impacts of rest areas.

Submission number(s)

28

Issue description

The respondent notes that the proposal will have negative visual impacts on the heritage listed 'Harp of Erin' building and its land.

Response

Transport acknowledges that the Harp of Erin is historically significant, both for visitors and the local community. As summarised in Section 6.5 and Appendix H of the REF, the indirect (visual) impact of the proposed works has been assessed to be minor, however this can be minimised through landscaping and sympathetic plantings for the new alignment. This may include earthworks to blend the required batter slopes into the existing topography, minimising the removal of existing vegetation and planning revegetation or screen plantings to match the surrounding landscape (Safeguard NH11). The proposed works are therefore assessed to be of negligible impact to the heritage significance of the Harp of Erin.

Submission number(s)

23

Issue description

The respondent is concerned the proposal would create a divide in the community and alter the existing landscape character.

Response

The Urban Design Plan will detail the application of the design objectives identified in Section 2.3.3 of the REF (Safeguard LV01). This includes design Objective 2, which is to minimise impacts to the integrity of heritage sites, significant trees, and cultural values of the community within the proposal. Objective 3 is also key to retain and maximise the accessibility and connectivity of adjoining existing communities for all users including motorists, public transport users, cyclists, and pedestrians. This is to maximise the safety, convenience, and ease of access through direct routes and connections.

Submission number(s)

40, 69

Issue description

Two respondents suggest the proposal and associated heavy vehicle movements during construction will negatively impact the landscape character. In particular, one respondent is concerned about the overall construction impacts on the landscape character of Hartley Valley.

Response

Construction of the proposal will result in a temporary increase in heavy vehicle movements, including cars, light and heavy trucks and concrete trucks, along the Great Western Highway and nearby local roads. The construction staging as described in Section 4.2.7 of this submissions report has been designed to minimise movements where possible.

As summarised in Section 6.2.4 of the REF, construction activities will be subjected to comprehensive traffic management measures to ensure the ongoing functionality of the Great Western Highway and local roads, and the safety of members of the public, motorists, and construction workers. This includes the preparation of a Traffic Management Plan (TMP) as per Safeguard TT01 in Section 6.2 of this submissions report. The TMP will include, but is not limited to, confirmation of haulage routes, measures to maintain access to local roads and properties and site-specific traffic control measures, including signage and reduced speed zones, to manage and regulate traffic movement. Measures to mitigate the visual impacts of the proposal during construction are set out in Safeguard LV05 and will include suitable barriers to provide screening of construction sites to minimise impacts on heritage items.

Submission number(s)

56

Issue description

The respondent believes the project will result in useless, unusable land with no aesthetic or economic value.

Response

The Urban Design Plan for the proposal will be prepared in line with the design principle of providing access to properties, where possible, from and across the corridor, including access between farmlands bisected by the new alignment (refer to Section 4.4 in Appendix L of the REF) (Safeguard LV01). The detailed design of the proposal will consider opportunities to reduce the construction footprint, explore the maximisation of vegetation and planting opportunities along the upgraded highway, and ensure residual land is developed to complement the existing landform (Safeguard LV02). Once operational, the proposal will improve road safety and accessibility, including through reduced congestion, travel time savings and improved reliability for staff, customers, and deliveries. This will impact positively on businesses, supporting general improvements to local business.

Submission number(s)

101

Issue description

The respondent notes that Transport has a history of quality control and noncompliance with the quality of nursery stock supplied in accordance with TfNSW D&C R179, Natsc, AS 2303-2018. It is stated that this affects the quality of planting stock used in landscaping for Transport's projects. There are problems with root girdling, pot bound trees, and trees with poor structure being used. The respondent has also observed poor planting practices and aftercare. Further, the respondent states that the tree planting specification needs to include specified site preparation specifications for dealing with compacted soils, contaminated soils and altered drainage patterns prior to planting, and the use of Sprayseed should be carefully considered with species used that are endemic to the area.

Response

The Urban Design Plan will include the location and identification of existing vegetation and proposed landscaped areas, including species to be used as per Safeguard LV01 in Section 6.2 of this submissions report. Further considerations will be made during detailed design (Safeguard LV02).

Indigenous seed collection will be carried out prior to commencement of construction of the proposal. A contractor will be selected during the tender process and chosen based on the suitability of their methodology. Landscape planting will include indigenous species endemic to the area. Locally collected seeds or bioregionally-sourced indigenous seeds and plants will be used where feasible, in accordance with Safeguard LV03.

Submission number(s)

107

Issue description

The respondent suggests that the proposal will impact signage in its operational phase.

Response

The Urban Design Plan prepared will include design treatments for structures including signage as per Safeguard LV01 in Section 6.2 of this submissions report. Signage will be designed, and its location coordinated, with other roadside elements including structures, furniture, fencing and landscape treatments (refer to Section 8.1 in Appendix L of the REF).

Submission number(s)

109, 119

Issue description

Two respondents note that the there is no use of modern architecture, such as land bridges, or any attempt to reduce the proposal's visual impacts.

Response

The Urban Design Plan will present an integrated urban design for the proposal and will include design treatments for built elements including retaining walls and bridges, and fixtures (Safeguard LV01). For bridges, this includes having a simple and streamlined design to allow the surrounding landscape character to predominate (refer to Section 7.2 in Appendix L of the REF). Other architectural elements included in the concept design include retaining walls, which will have a different finish depending on its location. Finishes such as a natural stone, gabion, and rock face would better integrate the retaining walls into its surrounding landscape. Water quality basins proposed in the open agricultural landscape of the Hartley Valley will be designed and shaped to resemble farm dams, to help integrate them with the existing landscape character (refer to Figure 7-7 in Appendix L of the REF). Further details regarding the urban design and landscape concept detail can be accessed in Section 7 in Appendix L of the REF.

Submission number(s)

119, 144

Issue description

Two respondents state that the view and landscape character from the Hartley Historic Village will be permanently damaged by the proposal, including the proposed concrete structures. One respondent is particularly concerned that the National Parks River Boardwalk in the Hartley Historic Village will be permanently visually impaired by the new road.

Response

Transport acknowledges that the proposed works will have indirect visual impacts on Hartley Historic Village (refer to Table 6-73 of the REF). As per Safeguard NH10 in Section 6.2 of this submissions report, attempts will be made, where possible, to blend new batter slopes and embankments with existing topography near the Hartley Historic Village. Detailed design will further consider opportunities to reduce the construction footprint and opportunities for re-vegetation and planting along the upgraded highway, particularly for screening (Safeguard LV01).

As stated in responses above, an Urban Design Plan will be prepared to support the final detailed proposal design and implemented as part of the CEMP. The plan will include the location and identification of existing vegetation and proposed landscaped areas, including species to be used. Native vegetation will be re-established in accordance with *Guide 3: Re-establishment of native vegetation of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA, 2011). The Urban Design Plan will be prepared in accordance with he relevant guidelines, including:

- Beyond the Pavement (Transport for NSW, 2020b)
- Landscape and design guideline (Roads and Maritime Services, 2018)
- Bridge Aesthetics (Transport for NSW, 2019).

Transport will engage in consultation with key stakeholders to identify further mitigation opportunities to incorporate into the Urban Design Plan. A CIS is being developed in accordance with Safeguard AH04 that will be developed in consultation with locally connected Aboriginal artists and will be incorporated into the Urban Design Plan.

The proposal design was accepted as the most appropriate of the design options as it has the least impact to sites and objects of heritage significance. This was noted in the 2013 concept design and gazetted in the LEP to avoid majority of the impacts to Hartley Historic Site.

Submission number(s)

79

Issue description

The respondent is concerned that the proposed elevated motorway at Jenolan Caves Road will have negative visual impacts on Hartley Valley.

Response

Section 6.9.3 of the REF acknowledges that the proposal will have high-moderate visual impacts on the Jenolan Caves Road interchange. To minimise visual impacts of the proposed twin bridges over Jenolan Caves Road, the Urban Design Plan will present design treatments to better integrate built elements into the surrounding landscape in accordance with the *Bridge Aesthetics guidelines* (Transport for NSW, 2019) (Safeguard LV01 in Section 6.2 of this submissions report). This includes having a simple and streamlined design for the proposed bridges to allow the surrounding landscape character to predominate (refer to 7.2 in Appendix L of the REF). Further considerations of the twin bridges to be made during detailed design include the provision of stone pitching to the spill through abutments (Safeguard LV02) (refer to Section 7.2.3 in Appendix L of the REF). The detailed design will also consider maximising vegetation and planting opportunities along the upgraded highway, particularly in both the road reserve and in the intervening areas to help screen the new alignment for the surrounding rural properties.

Submission number(s)

143

Issue description

The respondent states that the whole valley is significant, but River Lett is of most importance.

Response

Transport acknowledges that the proposal will visually impact the River Lett in Section 6.9 and Appendix L of the REF. This is particularly due to the installation of twin bridges over the River Lett and refurbishment of the bridge over the River Lett as part of a local service road. In accordance with Safeguard LV02 in Section 6.2 of this submissions report, detailed design will consider the following design treatments to minimise visual impacts of the bridges:

- Provide stone pitching to the spill through abutments, preferably using rock excavated from the site
- For existing bridge BR33, existing barrier would be removed and replaced with a regular performance twin rail barrier, which reduce the visual 'bulk' of the bridges when viewed from their surroundings.

Submission number(s)

144

Issue description

The respondent emphasises the importance of the REF to assess the full impact of the proposal on the integrity and significance of the Hartley Valley Cultural Landscape and other landscapes that the proposal will impact, both Aboriginal and non-Aboriginal.

Response

Appendix G and H of the REF provides a detailed assessment on the impacts of the proposal on each character zone. Section 5 in Appendix L of the REF acknowledges the cultural aspects that make the character zones unique. As noted above, the rest areas sit within the LCZ2 in the Urban Design, Landscape Character and Visual Impact Assessment (Appendix L of the REF) and were considered in Section 7.6.3 of that document. Details of the potential impacts the proposal will have on non-Aboriginal and Aboriginal heritage and culture are assessed in Sections 6.4 and 6.5 of the REF respectively.

In accordance with Safeguard AH04, Transport has developed a CIS to recognise the rich cultural heritage present in the Hartley Valley and across the Great Western Highway corridor. Transport has engaged consultants who are currently progressing an Aboriginal Cultural Heritage Study and Non-Aboriginal Thematic Heritage Study. This process includes:

- Reviews of historical documentation for preliminary themes and narratives
- Identifying community stakeholders, with connection to Country and heritage
- One-on-one consultation
- Workshops with community
- Key messaging
- Considering where and how these themes and stories are best exemplified.

2.14.2 Bungarrabee

Submission number(s)

109, 119, 142

Issue description

Three respondents noted that the visual assessment does not consider the view from Bungarrabee and will result in substantial loss of view, increased direct view of the highway and bridge and significantly increased noise.

Response

The viewpoint at Hartley Historic Village is representative of the view from all the buildings located in the Village, including Bungarrabee. Section 6.9.3 of the REF acknowledges that there will be visual impacts from the viewpoint at Hartley Historic Village due to the proposal (refer to Figure 6-43). However, safeguards and management measures will be in place to minimise the potential impacts as summarised in Section 6.2 of this submissions report. Vegetation will be provided where feasible to screen the highway as per Safeguard LV02. Detailed design will also consider, at locations where

greater visual impacts have been identified, the specification and planting of more mature sized shrubs and trees to help reduce the visual impact upon opening the road since the proposed planting will take a number of years (between three and 10 years) to establish at adequate height (Safeguard LV02).

Noise impacts at the Hartley Historic Village site have been assessed in Section 6.3 and Appendix F of the REF. Refer to Section 6.2 of this submissions report for information on the safeguards and management measures in place to address noise impacts.

2.14.3 Cultural values

Submission number(s)

123

Issue description

The respondent states that the Urban design, landscape and character and visual impact assessment fails to identify and assess the impact on the cultural landscape despite Transport NSW Guidelines.

Response

The cultural landscape is considered in the assessment of landscape character in Section 6.4 and Appendix G of the REF. Specifically, Section 7 in Appendix G of the REF provides details of the Aboriginal cultural values. The ACHAR was prepared in accordance with the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales* (DECCW 2011), the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (Code of Practice) (DECCW 2010b), the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (ACHCRP) (DECCW 2010a), and the *Procedure for Aboriginal cultural heritage consultation and investigation* (PACHCI) (Roads and Maritime Services 2011).

Transport is currently developing an Urban Design Strategy, prepared in accordance with the Urban Design Framework (Roads and Maritime, 2019), for the proposal. The strategy will incorporate Aboriginal and non-Aboriginal heritage. Additionally, interpretive elements have been considered for design integration in the Hartley Valley, including public works of art, interpretive signage, bridges, earthworks and plantings to celebrate and acknowledge the Aboriginal history of the local area and today's Aboriginal community that connects with the area (Safeguard AH04).

2.14.4 Hartley Valley rest areas

Submission number(s)

23, 31, 37, 40, 53, 97, 115, 144

Issue description

Several respondents raised the following concerns regarding the proposed rest areas:

- The rest areas and dual carriageway with several bridges will negatively impact the character of Hartley Valley
- Visual and light pollution from the Hartley Valley rest areas will impact the existing peaceful environment
- The rest areas have barely been mentioned in the REF
- The visual impact assessment does not include an assessment of the rest areas.

Response

Section 6.9 and Appendix L of the REF assess the potential visual impacts of the proposal, including the rest areas, which are located in Landscape character zone 2 (LCZ 2 - Hartley Ridge). Impacts to LCZ 2 - Hartley Ridge, including as a result of the rest areas are considered in Section 5.3.2 of Appendix L and measure to mitigate visual impacts of the rest areas are outline in Section 7.6.3 of Appendix L.

Transport received a significant number of submissions opposed to the heavy vehicle rest areas and understands the concerns about noise, light spill, visual amenity and cleanliness of the proposed sites. The rest areas have been designed to 'fit into' the landscape and further work will be carried out throughout the detailed design phase of the project to reduce their impacts through enhanced urban design and landscaping.

Transport's first priority for our road projects is the safety of all road users. It is vital to make sure that drivers of heavy vehicles have appropriate opportunities to rest so that they can avoid driver fatigue. Transport understands that Lithgow City Council and the community would prefer not to see rest areas in the Hartley Valley, however they are a crucial road safety measure, and must remain in the upgrade design. Transport considered several potential sites for the rest areas. These sites in the Hartley Valley were chosen due to their distance from other heavy vehicle rest areas, the availability of suitable land and the lack of locations in the built-up area of the Blue Mountains. While the rest areas cannot be moved for safety reasons, Transport appreciate the community's concerns and are doing everything possible to reduce the visual and noise impacts. Transport have also added facilities for light and recreational vehicles so the rest areas can benefit all road users.

The new design has been set lower into the landscape and Transport are developing the urban design further to include:

- Picnic table shelters, lawns and native tree plantings to provide a park-like atmosphere
- Paths linking the parking areas with the picnic shelters and toilet block
- Tree planting in the carpark to provide shade for vehicles
- Plantings to mark the entry to the rest area
- Information boards to showcase the unique heritage of the Hartley Valley.

The rest areas will only have enough facilities that enable them to serve their function. Where there are potential noise impacts, safeguards and management measures are in place to address them

(refer to 6.3.4 of the REF). As per Safeguard NV05 in Section 6.2 of this submissions report, noise modelling will be updated to consider additional impacts during detailed design and post-construction. Where receivers are considered for additional noise mitigation, they will be contacted in accordance with Safeguard NV13. The rest areas have also been designed into a cutting, which reduces the noise pollution for surrounding receivers. Without the need for heavy vehicles to traverse existing steep gradients, operational noise from heavy vehicles will also be reduced.

The following commitments have also been included for the proposal to reduce visual impacts and would be applicable to the development of the rest areas:

- Lighting impacts from the proposal will be mitigated in accordance with Safeguard LV04 in Section 6.2 of this submissions report. Temporary and permanent lighting would be designed and implemented with consideration of the need to orientate lighting to minimise light spill and glare impacts on nearby receivers
- Visual impact treatments have been proposed, including the provisions of extensive native planting to screen the rest areas from the road network (see Section 5.3.2 in Appendix L of the REF)
- Transport is committed to the preparation of an Urban Design Plan that will provide practical detail on the application of the design principles identified in Appendix L of the REF (Safeguard LV01). The design plan will ensure that the rest areas are fully integrated into the existing landscape whilst still providing filtered views from the new highway to acknowledge their presence
- Scattered native tree planting will provide shade for vehicles and a park-like atmosphere in the rest areas (refer to Section 7.6.3 in Appendix L of the REF). In accordance with safeguards LV01 and LV02, Transport will continue to develop treatments to benefit the surrounding environment
- The Appendix L of the REF considered the proposed bridges, which will be simple and streamlined to allow the surrounding landscape character to predominate (see Section 7.2 in Appendix L of the REF). Transport will further consider opportunities to reduce the bulk of structures including bridges during detailed design (Safeguard LV02).

Submission number(s)

23, 35, 38, 46, 47, 53, 55, 79, 80, 86, 87, 91, 95, 102, 103, 105, 120, 124

Issue description

Several respondents suggest that the proposal, particularly the rest areas, will have a negative impact on the landscape and character of the Hartley Valley, and note that it is inconsistent with the Valley's classification as a heritage area on the National Trust Register. One respondent expresses particular concern about the proposal’s visual impacts in the area near the Hartley Historic Village.

Response

Transport recognises the rich cultural heritage present in the Hartley Valley, and across the Great Western Highway corridor (see Sections 6.4, 6.9 and Appendices H and L of the REF). It travels over the County of three cultural groups, the Darug, Gundungurra and Wiradjuri who are the original creators of this corridor While there will be landscape character and visual impacts on the Hartley Valley due to the proposal, these will be mitigated where feasible through the safeguards and management measures outlined in Section 6.2 of this submissions report. Refer to the response above for a detailed response regarding the Hartley Valley rest areas.

As noted in Section 3.0 footnote in Appendix H of the REF the Hartley Valley National Heritage List (NHL) nomination is no longer valid. The inventory sheet for the National Trust item Hartley Valley (Coxs River) Landscape Conservation Area cannot currently be accessed but it was presumed that the NHL nomination was based on the National Trust listing and that they contain the same information. Although the Hartley Valley NHL nomination is no longer valid, heritage is a core consideration of the design development process and route options were assessed against their potential heritage impacts. Overall, given the constraints of the Hartley Valley and the incredibly rich heritage landscape along the Great Western Highway, the proposal achieves desirable outcomes by avoiding or mitigating significant impacts to the majority of heritage items within the construction footprint.

Submission number(s)

23, 47, 107, 116

Issue description

One respondent suggests that the view from Mount York across the Hartley Valley towards Mount Blaxland would be impacted by the proposal, in particular the proposed rest areas, and suggests the Valley should be preserved for future generations to enjoy. Three respondents suggest that the proposal will negatively impact the vista point lookout at Mount York due to the two truck rest stop areas in view. One respondent notes that no attempt has been made to assess the impact the upgrade will have on the view from Mt York.

Response

Twenty-three representative viewpoints, including the view from Mount York (Viewpoint 1 in Figure 6-36 of the REF), within proximity of the proposal were selected for the visual impact assessment (refer to Figure 6-37 of the REF). As shown in Table 6.2 in Appendix L of the REF, the proposed rest areas are not listed as a visible proposal element at any of the viewpoints.

An Urban Design Plan will present an integrated urban design for the proposal and will include design treatments for the proposed rest areas in accordance with Safeguard LV01 in Section 6.2 of this submissions report. The landscape design will ensure that the rest areas are fully integrated into the existing landscape whilst still providing filtered views from the new highway to acknowledge their presence. Scattered native tree planting will provide shade for vehicles and a park-like atmosphere in the rest areas. Extensive native planting is proposed to screen these facilities from the road network (see Appendix L of the REF). Further design considerations will incorporate feedback from community and authority consultation during the detailed design phase. Safeguard SE01 in Section 6.2 of this submissions report summarizes ongoing community consultation activities for the proposal.

Submission number(s)

54

Issue description

The respondent questions the wording around landscaping rest areas and seeks information regarding the maintenance of landscaping at rest areas.

Response

The maintenance of landscaped areas within the road reserve and rest areas will be negotiated between Transport and Council, in accordance with Safeguard LV03 in Section 6.2 of this submissions report.

2.14.5 Landscaping

Submission number(s)

23, 53, 75, 133

Issue description

One respondent requested a Place Design and Landscape Plan to be prepared that would include the use of native species in revegetation, landscaping, screening, and noise management initiatives. The respondent reinforces the landscape character and significance of the proposal area and the importance of improving place recognition and amenity through design and requests a commitment to the maintenance of landscaped areas. The respondent further states that no amount of landscaping will be sufficient to blend the highway's presence into the existing landscape. One respondent requests landscaping along the highway with trees appropriate to the local area to maintain the value of the area, whilst another respondent suggests improving the landscaping plans.

Response

As stated above, Transport is developing an Urban Design Strategy for the proposal. The Strategy will be prepared in accordance with the Urban Design Framework (Roads and Maritime, 2019) and will include urban design objectives and principles specific to the proposal (as detailed in Section 4 in Appendix L of the REF). Further development of the strategy will directly influence key engineering aspects of the concept road design, including road alignment, typical cross sections and retaining walls. The Urban Design Plan to be prepared for the proposal will detail the application of the design principles as per Safeguard LV01 in Section 6.2 of this submissions report.

The detailed design of the proposal will consider opportunities to explore the maximisation of vegetation and planting opportunities along the upgraded highway and ensure residual land is developed to complement the existing landform (Safeguard LV02). The minimisation of habitat removal during construction will also be considered (Safeguard BI08). Where there will be habitat removal, they will be replaced or rein-stated in accordance with *Guide 5: Re-use of woody debris and bushrock and Guide 8: Nest boxes of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA, 2011) (Safeguard BI10). Planting will be in line with the design principles outlined in Section 7.8.2 in Appendix L of the REF. These principles include, but are not limited to, the provision of planting to screen the highway from sensitive adjacent land uses, the use of provenance plant material wherever possible for all native plantings, and the provision of planting at outside verges wherever possible to minimise the visual scale of the highway. As per Safeguard LV03, landscaping planting and maintenance will be in accordance with the Lithgow City Council Weed List and include indigenous species endemic to the area, and landscaped areas within the road reserve and rest areas will be maintained by Transport.

Noise impacts are summarised in Section 6.3 and Appendix F of the REF. The proposed noise treatments (refer to Section 6.2 of this submissions report) will be sensitively designed to fit into the surrounding landscape.

Submission number (s)

131, 132

Issue description

Two respondents suggest that there is insufficient provision for a landscaping plan that disguises the proposed road and reduces noise, heat, and emissions pollution from the road.

Response

Noise impacts from the proposal are addressed in Section 6.3 of the REF. As stated above, Transport will ensure that the proposed noise treatments (refer to Section 6.2 of this submissions report) will be sensitively designed to fit into the surrounding landscape. For receivers that qualify for consideration of additional noise mitigation, potential noise mitigation measures will be considered in accordance with Safeguard NV13.

Transport is developing an Urban Design Strategy for the proposal in accordance with the Urban Design Framework (Roads and Maritime, 2019). The strategy will include urban design objectives and principles as detailed in Section 4 in Appendix L of the REF and will incorporate Aboriginal and non-Aboriginal heritage. The Urban Design Plan prepared for the proposal will detail the application of the design principles in accordance with Safeguard LV01 in Section 6.2of this submissions report. Specifically, the Urban Design Plan will include design treatments for the location and identification of proposed landscaped areas, including species to be used. This will include implementing plantings in key areas along the highway as well as ancillary roads within the construction footprint to provide shade for pedestrians and cyclists. The potential for planting of shrub species in medians and verges will be considered during detailed design as per Safeguard LV02, where the width of the medium allows, taking into account clear zone requirements for headlight glare screening (refer to Section 8 in Appendix L of the REF). Transport will work in collaboration with Lithgow Council to develop landscaping plans.

As summarised in Section 6.13 and Section 5.2 of Appendix O of the REF, the predicted changes in air quality as a result of the proposal show that adverse health impacts would not be expected. Refer to Section 2.18 for further detail on the management of potential air quality impacts.

Submission number(s)

54, 55, 64, 75, 133

Issue description

One respondent requests that funding is provided to maintain landscaping. Two respondents question the capacity of Lithgow Council to maintain landscaping, and three respondents express particular dislike for the landscaping at the previous Forty Bends upgrade.

Response

The maintenance of landscaped areas within the road reserve and rest areas will be negotiated between Transport and Council, in accordance with Safeguard LV03 in Section 6.2 of this submissions report. Maintenance of landscaping on residual land that would be divested on completion of the proposal would be the responsibility of the landholder. The Urban Design Plan will consider low maintenance landscaping.

Submission number(s)

22, 28

Issue description

One respondent supports the use of landscaping and planting to beautify the roads and believes that ongoing landscape maintenance is necessary to comply with visual amenity and fire standards. The respondent is concerned about weed control and maintenance, and one respondent is concerned whether the planned restoration and replanting will be properly carried out.

Response

A Flora and Fauna Management Plan prepared for the proposal will include protocols to manage weeds and pathogens during construction as per Safeguard BI01 in Section 6.2 of this submissions report. Weed species will be managed in accordance *with Guide 6: Weed management of the Biodiversity Guidelines: Protecting and managing biodiversity of RTA projects* (Safeguard BI25). Landscape maintenance will be carried out by Transport within the road reserve and rest areas. As per Safeguard BI06, native vegetation will be re-established in accordance with *Guide 3: Re-establishment of native vegetation of the Biodiversity Guidelines: Protecting and managing biodiversity of RTA projects.*

2.14.6 Light pollution

Submission number (s)

10, 28, 53, 107, 133

Issue description

Several respondents note that light pollution arising from the proposal will negatively impact residents.

Response

Detailed design will consider minimisation of permanent shading and artificial light impacts as per Safeguard BI29 in Section 6.2 of this submissions report. Specifically, the provision of planting in highway medians and glare guards will be considered during detailed design where feasible to reduce headlight glare from incoming highway traffic, local road traffic and local residents (Safeguard LV02). This will also minimise the visual scale of the highway and contribute to road safety through the screening of headlight glare from oncoming traffic. Screening or diversion of temporary lighting will also be considered to reduce unnecessary light spill as per Safeguard LV05.

Temporary and permanent lighting would be designed and implemented with consideration of the need to orientate lighting to minimise light spill and glare impacts on nearby receivers in accordance with Safeguard LV04 in Section 6.2 of this submissions report. Detailed design will also consider the minimisation of permanent shading and artificial light impacts (Safeguard BI29). Lighting and signage will be well-considered in its placement and should not detrimentally add to the visual impact.

2.14.7 Urban design and landscape report

Submission number (s)

23

Issue description

The respondent noted that the detailed Urban Design and Landscape Report annexed to the REF could not be read due to the small font size.

Response

The Urban Design and Landscape Report was made available via physical A4 printed copies or alternatively the report can be accessed online with the ability to 'zoom in' to further enlarge text.

2.15 Socio-economic

2.15.1 Active transport

Submission number (s)

35, 109

Issue description

Two respondents believe that the proposal will negatively impact the wellbeing of residents particularly in regard to safe exercise. The respondents are concerned that the proposal will negatively impact social interactions, walking, riding and visiting neighbouring properties and negatively impact local businesses.

Response

One of the objectives of the proposal is to improve the overall safety of the Great Western Highway (refer to Section 2.3.1 of the REF), which includes the improvement of cycling and pedestrian facilities. Existing public and active transport provisions, including pedestrian and cyclist access, will be maintained throughout the construction process (Section 3.3.7 of the REF and Safeguard TT01 in Section 6.2 of this submissions report). Safeguard TT06 requires the construction contractor to consult with property owners and occupiers regarding changes to access arrangements, which will include pedestrian and cycling assess.

As described in Section 6.2.3 of the REF, the proposal would improve conditions for pedestrians and cyclists through the provision of 2.5 metre nearside sealed shoulders along the upgraded Great Western Highway and two metre sealed shoulders on several of the service roads to accommodate on-road cyclists. Additionally, design development has considered future development of shared paths in the proposal vicinity. This is to be further explored and designed in the detailed design phase of the proposal in consultation with Lithgow City Council and other relevant stakeholders.

As outlined in 6.2 of this submissions report, Safeguards SE02, SE03 and SE04 identify measures to be implemented during the construction phase to minimise the impact of the proposal to local businesses. Accessibility to businesses will be maintained as much as practicable to ensure continuity of trade. Safeguards TT01 and TT02 in Section 6.2 of this submissions report will be implemented to minimise traffic impacts on local businesses.

Submission number (s)

109

Issue description

The respondent is concerned that the proposal creates a division along the community and that the current design does not provide adequate linkages for Hartley Village or provide for safe public transport, cycling or walking opportunities.

Response

As described in Section 6.10.3 of the REF, during operation the proposal would support safer and more reliable access to properties and destinations within the Little Hartley to River Lett stage of the proposal, through improved road conditions and the separation of local traffic and through traffic,

including freight vehicles for much of this stage of the proposal. The proposal would also improve regional accessibility and connectivity and lead to a reduction in regional and freight traffic passing through the main area of Little Hartley Village, leading to improved amenity through a reduction in noise, improved air quality and safety conditions for vehicles, pedestrians and cyclists within the town.

As noted above, one of the objectives of the proposal is to improve the overall safety of the Great Western Highway (refer to Section 2.3.1 of the REF), which includes the improvement of cycling and pedestrian areas (refer to Section 2.2.3). As described in Section 3.2 of the REF, design development has considered future development of shared paths in the proposal vicinity. An indicative layout of the future shared path was included as Appendix R of the REF. The alignment and structure of the future shared path will be developed and finalised during future design development and in consultation with Lithgow City Council and other relevant stakeholders.

During construction changes to local traffic conditions would occur which may impact community connectivity and community values. To mitigate these potential impacts existing active transport provisions will be maintained throughout the construction process and the construction contractor to consult with property owners and occupiers regarding changes to access arrangements, which will include pedestrian and cycling assess (Safeguards TT01 and TT06 in Section 6.2 of this submissions report).

Submission number (s)

35

Issue description

The respondent notes that walkways and bikeways were spoken about but were not present in the design plans.

Response

As noted above, the proposal would improve conditions for pedestrians and cyclists through the provision of 2.5 metre nearside sealed shoulders along the upgraded Great Western Highway and two metre sealed shoulders on several of the service roads to accommodate on-road cyclists (Section 3.2 of the REF). Design development has considered future development of shared paths in the proposal vicinity. An indicative layout of the future shared path was included as Appendix R of the REF. The alignment and structure of the future shared path would be developed and finalised during future design development and in consultation with Lithgow City Council and other relevant stakeholders.

2.15.2 Business and community impacts

Submission number (s)

6, 22

Issue description

Two respondents suggest that the proposal would bring tourists to Lithgow and boost the local economy.

Response

Transport acknowledges the respondents' support of the proposal and the predicted benefits to the local economy through tourism and increased access and connectivity.

Submission number (s)

5

Issue description

The respondent suggests that easing congestion for all road users will be a win for communities, businesses and road users.

Response

Transport acknowledges the respondent's support of the proposal and the benefits brought to the community, businesses and road users through easing of traffic congestion and catering for future population and traffic growth in the region.

Submission number (s)

18

Issue description

The respondent believes that some local businesses along the highway will suffer loss and interruption due to the proposal and queries whether they will be compensated.

Response

An assessment of socio-economic impacts of the proposal is included in Section 6.10.3 of the REF. Transport acknowledges that noise, traffic, air and other impacts may affect residences and local businesses during the construction period. Technical assessments by specialist environmental consultants have been and will continue to be carried out to inform management plans used to minimise impacts as far as practicable. A suite of safeguards are provided in Section 6.2 of this submissions report that will be implemented, should the proposal proceed, to mitigate these impacts.

Safeguards SE02, SE03 and SE04 in Section 6.2 of this submission report identify measures to be implemented during the construction phase to minimise the impact of the Proposal to local businesses. This will include consultation with businesses in accordance with the CCS, maintenance of access to businesses as much as practicable to ensure continuity of trade and provision of signage to key business locations during construction.

A Traffic Management Plan will be prepared and implemented that will outline the measures to maintain access to properties and local roads and requirements to consult with local community, including business owners on impacts to the local road network in accordance with Safeguard TT01 in Section 6.2 of this submissions report. Safeguard TT06 has been updated to reflect concerns that the proposal would impact businesses to include a specific requirement for the contractor to consult with businesses regarding access arrangements.

Five businesses at Little Hartley and Hartley would be impacted by partial property acquisition and temporary lease of land for the proposal. Impacts to these businesses would generally result from the loss of land used for some business activities and requiring changes to business operations and a reduction in passing traffic or changes to access arrangements (see Section 6.10.3 of the REF). Fair compensation for lease or acquisition of land will be delivered under Safeguards PL01, PL02 and PL03 in Section 6.2 of this submissions report.

Submission number (s)

23, 35, 119

Issue description

Three respondents believe that a key objective of the proposal should be community liveability and place. The respondents believe that the priority has been given to consideration of through traffic and freight transport over the community and liveability has not been adequately considered.

Response

As stated in Section 2.3.1 of the REF, the proposal's objectives are to improve economic development, improve the resilience of the road corridor between Katoomba and Lithgow, improve transport network performance and enhance liveability while being sensitive to the unique environment and cultural assets along the Great Western Highway corridor. The proposal has sought to balance the needs of the local community with the motorists and freight providers and provide benefits to all road users.

Appendix M of the REF includes a Socio-economic Impact Assessment technical working paper which is summarised in Section 6.11 of the REF. The assessment identified that, during operation, the proposal would improve the regional accessibility, connectivity and safety of the highway which would lead to a positive community outcome through improved accessibility to education, work and leisure facilities. It is acknowledged that some local residents would be required to travel further distances to access their properties due to the direction separated lanes, however this disbenefit would be offset by the increase in safety provided by upgraded access to the highway. Additionally, the reduction of regional and freight traffic passing through the centre of Little Hartley Valley would result in improved amenity and liveability within the town, through a reduction in noise, improved air quality and safety conditions for vehicles, pedestrians and cyclists. The provision of service roads will enhance the local road network, keeping the community connected, whilst separating through traffic and local traffic. Safeguard SE01 in Section 6.2 of this submissions report will be implemented to provide for ongoing community consultation through the preparation and implementation of the CCS. This strategy will inform the community and seek feedback on the developing proposal design and mitigation and management strategies that may impact the community during construction. Through the implementation of the measures set out in Section 6.2 of this submissions report and effective engagement with the community it is believed that impacts during the construction phase of the proposal can be effectively managed to maintain the liveability of the Hartley Valley.

Submission number (s)

23, 35, 36, 38, 55, 58, 59, 62, 65, 79, 90, 95, 96, 100, 102, 105, 106, 113, 115, 116, 131, 132, 133, 137, 138

Issue description

The respondents believe there would be potential negative socio-economic impacts on local businesses as a result of the proposal, in particular local businesses in Hartley Valley. They highlighted the historical compounding negative impacts of bushfires, drought and COVID-19, and requested Transport continue supporting businesses throughout the proposal.

Response

Socio-economic impacts relating to the proposal are addressed in Section 6.10 of the REF and considered potential impacts to local businesses as a result of the proposal. As noted above, it is acknowledged in Section 6.10.3 of the REF that local businesses would experience some negative impacts during construction and operation of the proposal, including:

- Changes to amenity during construction as a result of dust, noise and construction vehicles, diminishing the amenity of local area
- Changed traffic conditions resulting in potential delays, disruptions or changes to access arrangements
- Changes to visual and landscape amenity for one business and potential noise impacts to accommodation businesses within the Hartley Historic Village
- Changes to several business operations to adjust to partial property acquisition and temporary lease of land during construction and operation
- Reduction of passing traffic as a result of realignment of the highway.

The suite of mitigation measures set out in Section 6.2 of this submissions report will be implemented to mitigate the impacts of the proposal in consultation with local businesses, in accordance with the CCS (Safeguard SE01). Through the implementation of the mitigation measures identified the impacts to local businesses will be minimised.

The proposal would provide some positive impacts to local businesses during construction and operation, including:

- Increased expenditure by construction workers on day-to-day goods and services, benefiting local retailers and hospitality businesses
- Improved access and connectivity resulting in reduced travel times and travel reliability.

The proposal would largely improve the accessibility of towns through increasing the reliability and capacity of the road networks. This would lead to an increased opportunity for tourists in local businesses. Transport will consider appropriate sign posting on the upgraded highway to support local businesses.

Submission number (s)

23, 45, 53, 60, 158

Issue description

One respondent believes that allowing commercial interests at the rest areas, such as coffee carts, restaurants or service centres, would be detrimental to the well-being of local businesses. Other respondents suggest the design of the rest areas should consider future commercial development such as cafes and convenience stores.

Response

As described in Section 3.2 of the REF, the rest areas would have provisions for both light and heavy vehicles, as well as facilities including restrooms and picnic tables with seating. The proposal does not include any provision for any commercial vendors at the rest areas, nor is this a future intention of Transport. Safeguard SE01 outlined in Section 6.2 of this submissions report outlines the commitment to ongoing community consultation for the proposal.

Submission number (s)

62, 107, 114, 131

Issue description

Several respondents believe that the proposal will cause two essential local businesses to close.

Response

As noted above, it is acknowledged in Section 6.10.3 of the REF that five businesses would be impacted due to partial property acquisition and temporary lease of land. These include The Lolly Bug, Hartley Realty & Lifestyle Properties, Adams Shed, Alchemy Woodfired Pizza, Venice Caravan Park, Hartley Vet.

For most businesses, property acquisition or temporary lease of land for the proposal is not expected to impact ongoing business operations and impacts are generally not expected to be significant. However, it is acknowledged that a small number of businesses may experience impacts that require changes to business operations such as Adams Shed and Hartley Valley Vets. All partial and full acquisitions will be carried out in consultation with property owners and in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991* in accordance with Safeguards PL03 and PL02 in Section 6.2 of this submissions report.

Minimisation of impacts to businesses are addressed in Safeguards SE01, SE02, SE03, SE04, TT01, TT02, PL01 and PL02 of Section 6.2 of this submissions report.

Submission number (s)

102, 117, 119

Issue description

Three respondents are concerned about the mental health impacts of property acquisition on residents.

Response

Transport acknowledges that some residents near the proposal may experience stress and anxiety due to uncertainty about potential property impacts, property acquisition and proposed changes that may be associated with the proposal. The Great Western Highway Upgrade proposal team have been engaging with potentially affected property owners since November 2019 and Transport will continue consult with affected property owners about the acquisition process in accordance with Safeguard PL03. Land acquisition for the proposal will be carried out in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991* and *Property Acquisition – A guide for residential owners* (NSW Government, 2021a) and *Property Acquisition – A guide for residential tenants* (NSW Government, 2021b). Consultation will continue throughout detailed design in accordance with the CCS, including proposed changes to property impacts (Safeguard SE01).

To assist affected residents with the property acquisition process, Personal Manager Acquisitions have been designated in addition to Transport's Acquisitions Officer. The Personal Manager Acquisitions are available to provide confidential help and support to make the acquisition process as easy as possible. The Acquisitions Officer is responsible for carrying out the necessary steps to purchase property being acquired. Acquisition Officers are property experts and can answer complex questions you may have about the acquisition and valuation process. All affected property owners have been provided with direct contact details for their Personal Manager Acquisitions, who they can contact at any time if they have any queries.

Submission number (s)

47

Issue description

The respondent notes that 100 per cent of their property would be acquired as a result of the proposal, a process which has brought significant distress.

Response

Transport understands and acknowledges that finding out your property needs to be acquired can be shocking and confusing, and that it is often a challenging time. The Great Western Highway Upgrade proposal team have been engaging with potentially affected property owners since November 2019 and consultation with affected landowners will be ongoing, in accordance with Safeguard PL03 (see Section 6.2 in this submissions report).

In accordance with NSW Government guidelines, affected property owners are assigned a Personal Manager, who will represent a primary point of contact throughout the property acquisition process. The Personal Manager can provide various support services throughout the acquisition and relocation process, tailored to individual circumstances. This may include a free and confidential counselling service, and assistance with finding and settling into a new home.

Submission number (s)

23, 31, 36, 37, 53, 56, 62, 90, 95, 100, 105, 116, 119, 168

Issue description

Several respondents note that there is little consideration is given to the impacts of the proposal on the local community.

Response

An assessment of socio-economic impacts was included in Technical working paper – Land use, property and socio-economic assessment (Appendix M of the REF). The assessment identified the communities potentially affected by the proposal and identified the baseline characteristics, conditions and values of those communities. The potential impacts of the proposal on the communities were identified, assessed and evaluated using the valuation matrix provided in Section 2.2 of Appendix M of the REF. The assessment drew on information from the Australian Bureau of Statistics (ABS), supplemented with information and data from Government agencies, Lithgow City Council and Blue Mountains City Council resources and consultation with local businesses, community members and stakeholders.

The assessment acknowledged that the community would experience impacts during construction of the proposal including disruptions for motorists and road users during construction, temporary changes to local amenity, noise and light spill during night works, and clearing of vegetation from bushland areas, rural properties and the road reserve. Measures to mitigate and minimise these impacts have been identified in Section 6.2 of this submissions report and, where appropriate, will be developed and implemented in consultation with the community in accordance with the CCS (Safeguard SE01).

Changes to the alignment of the highway, new access roads and widening of the existing highway would intensify road infrastructure at some locations and move the alignment closer to residential users, which would have a negative impact on amenity for some residents. Safeguards to mitigate the visual impacts and improve operational noise outcomes have been included in Section 6.2 of this submissions report and include the development of an Urban Design Plan that will identify visually sensitive areas for landscaping and other treatments (Safeguards LV01 and LV02) and the evaluation of operational noise impacts and identification of additional noise mitigation measures (Safeguard NV13).

Once operational, the proposal would have long term positive socio-economic impacts through the improvement of access and connectivity for the community and improvements to amenity through the reduction in through traffic within the Little Hartley Village, which would support safer access and enhanced amenity for residents and businesses.

Submission number (s)

89

Issue description

The respondent believes that the proposal's impact on essential services is unacceptable.

Response

The definition of essential services can be interpreted as utility services, emergency services, or business services. This response addresses potential impacts to all types of essential services.

Section 3 of the REF details the proposal description and identifies the need for some public utility adjustment (electricity, communications and water) that are located in the construction footprint. During detailed design, further consultation with utility asset owners would be carried out to determine opportunities for protection, rather than relocation, of utility assets. Disruptions to utilities will

Access for emergency services will be maintained at all times through all phases of construction, in accordance with Safeguard SE05. Safeguards TT01, TT03, TT05 and TT08 in Section 6.2 of this

submissions report identify measures that will be implemented to ensure connectivity and access to emergency services through the road network.

Accessibility to businesses will be maintained as much as practicable to ensure continuity of trade. Safeguards TT01 and TT02 in Section 6.2.4 of the REF will be implemented to minimise traffic impacts on local businesses. Safeguards SE02, SE03 and SE04 in Section 6.2 of this submissions report identify measures to be implemented during the construction phase to minimise the impact of the proposal on local businesses, including the provision of signage and on-going consultation.

The Great Western Highway Upgrade Program would see benefits delivered to the local community such as improved road safety and increased capacity of the Great Western Highway for future traffic and residential populations. The proposal would largely improve the accessibility of towns through increasing the reliability and capacity of the road networks, providing the community with greater access to business services and leading to an increased opportunity for tourists in local communities.

Submission number (s)

131

Issue description

The respondent suggests the sectioning of the proposal in Medlow Bath, Blackheath, Mount Victoria and the Hartley Valley will divide the community.

Response

The Great Western Highway Upgrade Program is being carried out in stages, and therefore each stage is subject to separate environmental assessment and approval in accordance with the EP&A Act. As discussed in Section 6.17.2 of the REF, the four proposals would occur both concurrently in timeframe and consecutively geographically, therefore the cumulative impacts have been considered within the REF for the proposal.

As described in Section 5 of the REF, consultation and engagement have been managed through the consultation strategy for the Great Western Highway Upgrade Program to ensure that community voices across the Great Western Highway between Katoomba and Lithgow are all heard. Consultation with residents, businesses and other community members will still continue to occur as supported by Safeguard SE01 of Section 6.11.4.

The Great Western Highway Upgrade Program would bring improvements to the existing performance of the highway including accommodating future increases in traffic volumes, improved traffic flows and improved safety for vehicles and active transport users. Recent traffic modelling indicates that the complete Great Western Highway Upgrade Program could halve the projected 2036 peak travel time between Katoomba and Lithgow on busy weekends from one hour to thirty minutes.

Submission number (s)

154

Issue description

The respondent suggests the proposal will detract from the lifestyle and amenity of residents in the area.

Response

Impacts to the community, including consideration of lifestyle and amenity impacts are discussed in Section 6.10.3 of the REF. It is acknowledged that the proposal, in particular widening of the highway and the provision of bridges and new access roads would impact on amenity for some residents through increases traffic noise and visual impacts. Measures to mitigate these impacts are provided in Section 7.2 of this submissions report and include re-evaluation of operational traffic noise impacts through detailed design with an aim to minimise traffic noise, identification of site specific noise mitigation measures where residual exceedances remain and implementation of an Urban Design Plan to reduce visual impacts (Safeguards NV13 and LV01).

The proposal offers a number of amenity and lifestyle benefits such as improvements to the accessibility of towns through increasing the reliability and capacity of the road networks. This would lead to an increased opportunity for tourism in local communities.

The proposal would also improve conditions for pedestrians and cyclists by providing a range of improvements to the existing active transport network and facilities. Design development has considered the future development of shared paths in the vicinity of the proposal, which would be developed and finalised during future design development and in consultation with Lithgow City Council and other relevant stakeholders (see Appendix R of the REF). These features will provide for additional active lifestyle options within the community. Additionally, the removal of freight and through traffic from the centre of Little Hartley Village will result in improved amenity through a reduction in noise, improved air quality and safety conditions for vehicles, pedestrians and cyclists.

Transport will continue to consult with the community, in accordance with Safeguard SE01 in Section 6.2 of this submissions report and will seek feedback on the developing proposal design to maximise the community benefits delivered by the proposal.

Submission number (s)

17

Issue description

The respondent states the proposal is important and needed by the community.

Response

Transport acknowledges the respondents support of the proposal. Increasing connectivity and access to townships while improving road safety and accommodating future road capacity delivers social benefits to the community and visitors alike.

Submission number (s)

141, 142

Issue description

Two respondents expressed concern for their wellbeing once the proposal commences.

Response

Transport acknowledges the temporary impacts and inconvenience to residents during the construction phase of the proposal. Safeguards summarised in Section 6.2 of this submissions report will be enacted to minimise or mitigate impacts to residents. Construction noise and vibration impacts

will be managed through the implementation of a Construction Noise and Vibration Management Plan (CNVMP) (Safeguard NV01) and mitigation treatments to individual properties will be implemented to offset the ongoing potential noise impacts from the road upgrade (Safeguard NV13). Impacts to traffic during construction will be minimised where possible, and access to properties and businesses will be maintainedf throughout construction (Safeguards TT01 to TT09).Landscaping (Safeguards LV01 to LV03) and biodiversity (Safeguards BI01 to BI34) will be managed and the relevant safeguards and management measures will be implemented to maintain the landscape character and visual amenity of the surrounding areas.

Transport is committed to further consultation with the community. To facilitate communication between Transport and the community, a CCS will be prepared in accordance with Safeguard SE01 in Section 6.2 of this submissions report. The CCS will include but is not limited to procedures and mechanisms for regular distribution of information about the proposal, mechanisms to keep relevant stakeholders updated on construction activities, schedules and milestones and avenues, and avenues for the community to provide feedback.

2.15.3 Employment

Submission number (s)

6

Issue description

The respondent suggests that the proposal will provide a major boost for employment and local businesses.

Response

Transport acknowledges the respondent's support of the proposal. Once operational, the proposal would have long term positive impacts on access and connectivity for local and regional communities, business, and industry. Reduction of through traffic, including heavy vehicles within the Little Hartley Village would support safer access and enhanced amenity for residents and businesses within the village.

Submission number (s)

30, 76

Issue description

Two respondents state that there are other proposals that could better benefit employment in the community such as environmental rehabilitation and augmentation works and that the proposal will not create long term employment in the Lithgow region.

Response

As stated in Section 2.3.1 of the REF, the objectives of the Great Western Highway Upgrade Program are to improve economic development, improve the resilience of the road corridor between Katoomba and Lithgow, improve transport network performance and enhance liveability while being sensitive to the unique environment and cultural assets along the Great Western Highway corridor. While temporary employment would be created in the construction phase of the proposal, it is not the objective of the proposal to directly increase employment and the proposal does not claim to directly

increase employment in the long term. The improvements to connectivity and access for mountain communities will improve opportunities for tourism in the area and facilitating local employment opportunities in the long term.

2.15.4 Land value

Submission number (s)

58, 89

Issue description

Two respondents are concerned about the perceived negative effects on property values.

Response

Property values are driven by a range of economic, social and amenity factors. For example, housing supply and demand, interest rates, economic growth, local amenity and accessibility to such things as employment and social infrastructure. It is likely that broader external factors would influence property values more than perceived or actual impacts resulting from the proposal. Furthermore, improvements to travel times, reduced congestion and increase amenity within the centre of Little Hartley Village delivered by the proposal are likely to improve liveability in the vicinity of the proposal.

Transport acknowledges that some residents will experience temporary amenity impacts during the construction phase of the proposal. These impacts will be mitigated through the implementation of the suite of safeguards set out in Section 6.2 of this submissions report.

Submission number (s)

67

Issue description

The respondent believes the proposal will increase land value.

Response

Transport acknowledges the respondent support for the proposal. Increasing connectivity and access to townships while improving road safety and accommodating future road capacity delivers social benefits to the community and visitors alike.

Submission number (s)

91

Issue description

The respondent states that local landholders and residents haven't been compensated for the proposal.

Response

The proposal has been designed and developed to minimise property acquisitions and has prioritised the use of NSW Government-owned land where possible. Properties requiring partial or full

acquisition will be fairly compensated under the *Land Acquisition (Just Terms Compensation) Act 1991* and *Property Acquisition – A guide for residential owners (NSW Government, 2021a)* and *Property Acquisition – A guide for residential tenants (NSW Government, 2021b),* in accordance with Safeguard PL02. Temporary lease of land for ancillary facilities will also occur and will be reinstated at the end of lease period in accordance with PL01.

2.15.5 Maintenance

Submission number (s)

89, 107, 131, 132

Issue description

Several respondents suggest that Lithgow Council currently struggles to maintain its roads and are concerned that the proposed upgrade will increase council taxes for the community.

Response

Ongoing maintenance of the Great Western Highway and associated infrastructure (such as rest areas) is and will always be the responsibility of Transport for NSW. Transport will consult with Lithgow City Council on the maintenance of service roads.

Submission number (s)

58

Issue description

The respondent believes the truck rest areas will generate litter and result in lower property values.

Response

The proposed rest areas are still undergoing detailed design and will be furnished with waste management infrastructure and undergo maintenance by Transport. Regular cleaning of the rest areas will be carried out by Transport staff, with opportunities for road users to report unsatisfactory conditions via a phone line. If littering is observed, it is encouraged to report this to the NSW EPA via the EPA website.

2.15.6 Tourism

Submission number (s)

35, 53, 79, 89

Issue description

One respondent requests that the Hartley Valley be kept as a great tourist destination to attract visitors to the Central West. Three respondents suggest the proposal is incompatible with the tourism ideals for the area.

Response

The proposal includes development of service roads and connecting roads to the upgraded Great Western Highway ensure the continued connectivity of townships and communities, while still benefiting from the diversion of large heavy vehicles from main population areas.

The proposal would largely improve the accessibility of towns through increasing the reliability and capacity of the road networks. Additionally, the proposed improvements to the existing active transport network and facilities would increase safety and usability of the highway for active transport users. This would lead to an increased opportunity for tourism in local communities.

Submission number (s)

90, 95, 96, 134

Issue description

Several respondents believe the locating of a historical info board in a truck stop will not encourage tourism.

Response

The proposal has been prepared to improve the road safety and road network connections for the Little Hartley to Lithgow section of the Great Western Highway. This would directly lead to an improvement in accessibility of townships to tourists from Sydney and NSW Central West.

Further community consultation will be carried out in accordance with Safeguard SE01 in Section 6.2 of this submissions report, and feedback will be used to inform the final detailed design, including the location of tourist information signage.

Submission number (s)

113, 131, 132

Issue description

The respondents believes tourism will be detrimentally affected by the proposal. One respondent believes the REF disregards the tourist significance of the Valley.

Response

The proposal would increase reliability of the local road network for communities in the Lithgow to Hartley Valley section of the Great Western Highway. The upgraded road network would provide increased capacity of the Great Western Highway for future traffic and residential populations and tourist visits. The proposal also will provide improvement to road safety and intersection level of service which would otherwise deteriorate to unacceptable levels. The proposal will ensure the continued connectivity of townships and communities, while still benefiting from the diversion of large heavy vehicles from Little Hartley Village.

It is acknowledged in Section 6.10.3 of the REF that there will be some loss of amenity during the construction phase of the proposal which could impact tourism in the Hartley Valley. A suite of safeguards are included in Section 6.2 of this submission report to mitigate impacts during both the construction and operational phases. Measures include maintaining accessibility to businesses as much as practicable to ensure continuity of trade and provision of signage to key business locations as per Safeguard SE02 in Section 6.2 of this submissions report.

2.16 Property and land use

2.16.1 Land use

Submission number (s)

12, 65, 76

Issue description

Three respondents request that agricultural land is not impacted by the proposal.

Response

Section 4.1.2 of the REF presents a summary of the zoning Lithgow LEP of the land impacted by the proposal and Section 6.11.3 of the REF provides a summary of land use impacts of the proposal. As stated in Section 6.11.3, about 64 per cent of directly impacted land to be acquired is rural and bushland and 34 per cent of land to be acquired is rural residential (see Table 6-109 of the REF for further detail).

As noted in Section 6.11.3 of the REF, the proposal has been designed to minimise impacts on land used for primary production and farming, and would support the needs of residents by improving the transport network. The proposal design has sought to minimise any impact of severance on farming operations as far as practicable, with individual consultation for property owners where adjustments to property is required.

Submission number (s)

6, 26, 36, 95, 101, 102, 103, 105, 107, 113, 120, 124

Issue description

Several respondents are concerned too much private land is being utilised for the proposal. The respondents suggest the proposal is inconsistent with the residential zoning of the area.

Response

Property and land use impacts are discussed in Section 6.11 of the REF. As described in the REF, 56 privately owned lots would be impacted by the proposal, with 11 lots requiring full acquisition and 50 lots requiring partial acquisition. Development of the concept design has sought to minimise impacts to private property and severance to farming operations as far as practicable (refer to Section 2.4 of the REF). Any adjustments to properties required for the proposal would be carried out in consultation with the property owner.

As described in Section 6.11.3 of the REF, property acquisition in part or full has been determined on the basis of the preliminary design and would be finalised during detailed design and ground survey.

As required by Safeguard PL02 in Section 6.2 of this submissions report, all property lease and acquisition would be carried out in consultation with landowners and in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991* and the *Property Acquisition – A guide for residential owners* (Transport for NSW, 2021a) and *Property Acquisition – A guide for residential tenants owners* (Transport for NSW, 2021b).

Following construction works, ongoing Safeguards including TT08 and TT09 (detailed in Section 6.2 of this submissions report) will be implemented to ensure continued access for road users. Transport does acknowledge some residents will be required to travel further distances to access their properties due to the direction separated lanes however this disbenefit will be offset by the increase in safety resulting from the restricted turns against ongoing highway traffic.

Under the Lithgow LEP, the construction footprint is zoned as SP2 Infrastructure and the corridor has been gazetted since 2013. Table 4-1 of the REF demonstrates how the proposal is generally consistent with the land zone objectives as set out in the Lithgow LEP for relevant zone types.

The proposal would support the needs of residents by improving the transport network. The proposal has also been designed to minimise impacts to land protected by the *National Parks and Wildlife Act 1974* and would offset land zoned as E1 with compensatory land of equivalent or greater value.

Submission number (s)

23, 35, 36, 53, 54, 55, 80, 86, 87, 90, 91, 102, 120, 138

Issue description

Several respondents suggested the rest areas are inconsistent with the residential land zoning in the Hartley Valley. A few respondents suggested the rest areas are inconsistent with the Lithgow Land Use Strategy.

Response

As described in Section 4.1.2 and shown in Figure 4-1 of the REF, under the Lithgow LEP the land on which both the eastbound and westbound rest areas sit is zoned as SP2 Infrastructure.

The rest areas have been designed to be sympathetic to the surrounding environment whilst still serving a purpose. The positioning of the rest areas gives an opportunity to celebrate the unique industrial and natural heritage with the installation of information boards.

Landscape character would be preserved through the implementation of Safeguards LV01, LV02, LV03 and LV05 in Section 6.2 of this submissions report. These include preparing and enacting an Urban Design Plan prior to construction that would include design treatment for built aspects such as fixtures, landscape works, and infrastructure such as retaining walls and bridges. The detailed design phase further considers minimising the need for ancillary facilities, minimising and refining the proposal construction footprint, and the investigation of opportunities to incorporate pedestrian and cycle connections.

The Lithgow Land Use Strategy was prepared to inform, and was incorporated into, the Lithgow LEP. As described in Section 4.1.2 of the REF, the proposal was prepared in accordance with the Lithgow LEP, which supersedes the Land Use Strategy.

Submission number (s)

36, 55, 74, 80, 86, 87, 90, 91, 95, 96, 102, 103, 105, 120, 124, 138, 147

Issue description

Several respondents suggest the project will divide the community.

Response

As stated above and discussed in Section 6.10.3 of the REF, during operation the proposal would support safer and more reliable access to properties and destinations through improved road conditions and the separation of local traffic and through traffic for much of the Little Hartley to River Lett stage of the proposal. The Great Western Highway will be used for through traffic, whilst service roads will be used primarily for local traffic. The proposal would also lead to a reduction in regional and freight traffic passing through the main area of Little Hartley Village, leading to improved amenity through a reduction in noise, improved air quality and safety conditions for vehicles, pedestrians and cyclists within the town. Conditions for pedestrians and cyclists will also be improved by the proposal through the range of improvements provided to the existing active transport network and facilities. This would improve the connectivity of the community for motorists, pedestrians and cyclists.

Transport acknowledges that some residents will be required to travel further distances to access their properties due to the direction separated lanes, however this disbenefit will be offset by the increase in safety resulting from the restricted turns against ongoing highway traffic.

Transport also acknowledges that there will be temporary access and connectivity impacts to residents, businesses and road users during the construction phase of the proposal (see Section 6.10.3 of the REF). A suite of safeguards have been developed to mitigate these impacts, including Safeguards TT01, TT02, TT06 in Section 6.2, which provide measures to minimise the impact of the proposal on traffic access and impacts on residents and minimise the loss of connectivity.

2.16.2 Property access

Submission number(s)

12, 13, 15, 20, 47, 90, 107

Issue description

Several respondents raised the following issues regarding access:

- Request for adequate access to the 'Morning View' property for all residents. Request for clarification on how their property access would be reinstated, and requests that Transport show planned access for their properties before additional planning
- One respondent states that the proposal involves a new access road to their property which will pass by a shed on their property and notes that this option is far less appealing than the current access road
- The proposal design will restrict immediate access to properties
- The proposal will prevent some residents from having direct access to the highway
- Residents on the other side of the Great Western Highway will have circuitous routes to their roads as a result of the proposal
- Some property owners are being denied access to their properties.

Response

Property access would be maintained throughout construction and operation of the proposal, although some access may be relocated or reinstated to tie into new road levels as per Safeguard PL03 in Section 6.2 of this submissions report. Where possible, Transport would ensure that property access would be reinstated to a pre-existing condition or better as soon as construction works are

complete. Transport will continue to consult with property owners and occupiers throughout the detailed design process regarding changes to access arrangements (Safeguard TT06).

It is acknowledged that some local roads would not have direct access to the new Great Western Highway and that road users would instead be directed to dedicated intersections. These specific intersections have been designed to minimise the potential risks to vehicles turning into fast moving traffic. Further, the addition of 10 new service roads would improve local connectivity without the need to access the new Great Western Highway for local trips.

Submission number (s)

47

Issue description

The respondent notes during previous Great Western Highway upgrades that survey equipment was installed on their property without consent and is concerned of similar incidents occurring during construction of this proposal.

Response

The respondent has been contacted by a representative of Transport about this issue which occurred during a previous proposal. If future access was required to any properties, the project team would request permission and give the impose conditions.

Submission number (s)

109, 119, 142

Issue description

Three respondents are concerned that access to their river water pump would now be via a five kilometre route, when accessing by car and notes that they do not consider this appropriate or safe.

Response

The potential impact on the use and enjoyment of property is noted in Section 6.10 of the REF. Transport is engaging with the respondent and working collaboratively on a design that achieves the best outcome for all parties.

2.16.3 Property acquisition

Submission number (s)

8, 15

Issue description

Two respondents stated they have not been contacted with regards to property acquisition.

Response

The respondents' properties are located within a separate section of the Great Western Highway Upgrade Program. The Forty Bends to Lithgow section is currently undergoing a final review of the 100 per cent concept design against recent survey works. Once this review is completed property acquisition plans can commence and owners of affected properties will be contacted. All affected property owners have been provided with direct contact details for their Personal Manager Acquisitions, who they can contact at any time if they have any queries.

Submission number (s)

12

Issue description

The respondent requests that local properties are not impacted by the proposal.

Response

Section 6.11 of the REF addresses Property and Land Use impacts, and specifically the properties to be acquired for the proposal. Transport has been in contact with all owners requiring acquisition, those requiring partial acquisition will be contacted to come up with a solution on a case-by-case basis.

As described in Section 6.11.3 of the REF, 56 privately owned lots will be impacted in either the short term or long term, with 11 lots requiring full acquisition and 50 lots partial acquisition. For those properties that would be subject to partial acquisition, it is understood that the proposal would have no substantial effect on the functionality or viability of the current or future use of the remainder of the property. Acquisition of properties will be carried out where a significant portion or an entire property is located within the construction footprint (based on cadastral overlay). Further ground surveys will be carried out during the detailed design phase, which may alter the final acquisition requirements and estimates.

As per Safeguard PL01 in Section 6.2 of this submissions report, all acquisition would be carried out in consultation with landowners and in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991*, *Property Acquisition – A guide for residential owners (NSW Government, 2021a)* and *Property Acquisition – A guide for residential tenants (NSW Government, 2021b).*

Submission number (s)

23, 57

Issue description

Two respondents stated residents have been dissatisfied with consultation regarding property acquisitions throughout the proposal development over the years.

Response

Property and land use is discussed in Section 6.11 and Community Consultation is discussed in Section 5 of the REF. Details on consultation that has been carried out after the exhibition of the REF is provided in Section 1.2 of this submissions report.

As noted in Section 5 of the REF, community concerns regarding property impacts were raised in initial consultation sessions and the proposal design has sought to minimise property impacts.

The NSW Government has introduced additional support programs to help residents affected by a property acquisition to navigate through the process. This includes a designated Personal Manager Acquisitions, in addition to Transport's Acquisitions Officer.

All property acquisition, whether it is full or partial acquisition of a property, will be carried out in accordance with the provisions of the *Land Acquisition (Just Terms Compensation) Act 1991* and the Transport for NSW Land Acquisition Information Guide in consultation with landowners, as per Safeguard PL02 in Section 6.2 of this submissions report. Professional industry-based valuers will be engaged to assess fair compensation for landowners and the process allows both Transport and owners to have valuations completed so that an agreement can be reached. Any property adjustments will be completed in consultation with property owners, in accordance with Safeguard PL03 in Section 6.2 of this submissions report.

Consultation with property owners will continue through detailed design as the extent of property requiring acquisition is refined and confirmed. This may alter the final acquisition requirements and estimates as presented in Section 6.11 of the REF.

Further consultation will be carried out in accordance with the CCS, in accordance with Safeguard SE01 in Section 6.2 of this submissions report. Consultation is proposed on an ongoing basis using print, online, face-to-face information delivery, and individual engagement with affected landowners.

Submission number (s)

71, 105, 117

Issue description

Two respondents suggest that the proposal is causing distress to residents, particularly for property owners that will have their properties acquired. One respondent noted some landowners and their families have been there since the area was originally settled.

Response

Transport acknowledges that property acquisition may cause distress and anxiety to affected residents. An early and ongoing consultation with landowners has been carried out and will continue to occur throughout the detailed design process (Section 4.6.1 of the Socioeconomic Technical Working Paper (REF Appendix M).

Further ground surveys will be carried out during the detailed design phase, which may alter the final acquisition requirements and estimates. Safeguard PL03 in Section 6.2 of this submissions report will ensure property owners are consulted throughout the property adjustment process.

The NSW Government has introduced additional support programs to help residents affected by a property acquisition to navigate through the process. This includes a designated Personal Manager Acquisitions, in addition to Transport's Acquisitions Officer.

Personal Manager Acquisitions are community engagement professionals specially trained to assist residents affected by property acquisition. The Personal Manager Acquisitions is available to provide confidential help and support to make the acquisition process as easy as possible. The Acquisitions Officer is responsible for carrying out the necessary steps to purchase property being acquired. Acquisition Officers are property experts and can answer complex questions you may have about the acquisition and valuation process. All affected property owners have been provided with direct contact details for their Personal Manager Acquisitions, who they can contact at any time if they have any queries.

2.16.4 Property impacts

Submission number (s)

107

Issue description

The respondent states that some properties will be impacted by the presence of the 4-lane, 100 kilometre per hour motorway within 50-80 metres of their properties.

Response

Transport acknowledges in Section 6.11.3 of the REF that many residents are located close to the existing highway and will be located close to the proposal. The REF has considered impacts on these residents during both construction and operation of the proposal. Some key impacts consider include:

- Traffic and transport - discussed in Section 6.2 of the REF
- Noise and vibration - discussed in Section 6.3 of the REF
- Land use and property - discussed in Section 6.10 of the REF
- Visual amenity - discussed in Section 6.9 of the REF
- Social and economic - discussed in Section 6.11 of the REF

These assessments considered the proximity of residences to the proposal and safeguards have been proposed (see Section 6.2 of this submissions report) to mitigate those impacts during both the construction and operational phases.

2.16.5 Property value

Submission number (s)

15, 46, 47, 53, 91, 100, 102, 109, 119

Issue description

Several respondents stated partial acquisition of land on their property and construction activities will reduce the value of their property.

Response

As described in Section 6.10.3 of the REF, Transport acknowledges that the acquisition of property will have a social and economic impact on landowners directly impacted by the acquisition process. The proposal would maximise long-term social and economic benefits while minimising long-term negative impacts on communities and the environment. Improved traffic conditions will benefit society through improving accessibility to education, work and leisure facilities. The Great Western Highway Upgrade Program is expected to bring with it benefits to road safety and road network performance. The proposal is also expected to make mountain communities more accessible and boost tourism to areas such as Hartley.

Property and land use impacts are discussed in Section 6.11 of the REF. Property acquisition in part or full has been determined on the basis of the preliminary design. Finalisation through ground surveys in the detailed design phase will determine the final acquisition requirements and estimates. As per

Safeguard PL02 in Section 6.2 of this submissions report, acquisitions will be carried out through the use of professionally qualified industry-based valuers to assess compensation and carried out in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991*. Further distribution of information and updates for the proposal and engagement with affected landowners and the community will be carried out as part of ongoing consultation (Safeguard SE01).

Transport acknowledges that the construction phase will cause temporary disturbance to residents, businesses and visitors. Visual impact will be mitigated during construction as per Safeguards LV01, LV03, LV04 and LV05 in Section 6.2 of this submissions report. Ongoing visual amenity will be improved through Safeguards LV01, LV02 and LV04 and landscaping and plantings will be improved through Safeguards BI06, BI08, and BI10. Further discussion of visual impacts is available in Section 2.14 of this submissions report.

As required by Safeguard LV02, the number of ancillary facilities would be minimized and would be located away from sensitive receivers as far as practicable (Safeguard AQ08 of Section 6.2 of this submissions report). Leasing of land for properties affected by construction activities has been identified as a solution to provide compensation to landowners affected by land use changes (as discussed in Section 4.2.2 of Appendix M of the REF). Traffic changes associated with construction activities would impact local residents (as described in Section 6.2.3) but would be minimised through the creation and implementation of a Traffic Management Plan (Safeguard TT01).

Submission number (s)

102

Issue description

The respondent states they have previously endured over three years of upgrades to the Great Western Highway, and expresses concern about the proposal's potential impacts on property values in Hartley Valley.

Response

Section 6.17 of the REF acknowledges that cumulative construction impacts associated with the proposal and previous projects can contribute to construction fatigue in residents. Impacts during construction will be minimised by implementing the Construction Environment Management Plan (CEMP) as per Safeguard GEN01 in Section 6.2 of this submissions report.

The proposal would cater for future population and traffic growth in the region by improving the regional accessibility, connectivity and safety of the highway leading to a positive community outcome. Improved traffic conditions will benefit society through improving accessibility to education, work and leisure facilities. The Great Western Highway Upgrade Program is expected to bring with it benefits to road safety and road network performance.

Submission number(s)

15

Issue description

The respondent suggested that the concept design has been sufficiently completed to provide a reasonable indication of the proposed changes to the Great Western Highway between Little Hartley and Lithgow. The respondent seeks clarity on how the proposal will impact their residence, noting the section of the proposal relating to their property has not been finalised.

Response

The Forty Bends to Lithgow section of the proposal is undergoing a final review of the 100 per cent concept design against recent survey work. The review is expected to be completed in 2023. Once completed, property acquisition plans can be completed, and owners of affected properties will be contacted.

Early and ongoing consultation with affected landowners has been carried out and will continue to occur throughout the detailed design process (Section 4.6.1 of the Socioeconomic Technical Working Paper (REF Appendix M). Please contact the project team for further information.

2.16.6 Public access

Submission number (s)

15

Issue description

The respondent is concerned the new access road will encourage drivers to explore their property and the adjoining nature reserve. The respondent suggests the new access road may encourage off road motorbike traffic to gain access to the nature reserve behind their property, particularly since their property is unfenced.

Response

Service roads have been included in the design to minimise direct access to the Great Western Highway from adjacent properties. The service roads act as a connection between the Great Western Highway and properties, and access would be maintained throughout construction and operation of the proposal.

The proposal would support safer and more reliable access to properties and destinations within the Little Hartley to River Lett stage of the proposal, through improved road conditions and the separation of local traffic and through traffic, including freight vehicles for much of this stage of the proposal.

Access roads are designed and intended for use by residents to gain access to their property. Through-traffic is unlikely to occur and would stay on the highway.

Transport will consult with landowners regarding changes to access arrangements prior to and during construction as per Safeguard TT06 in Section 6.2 of this submissions report. Consultation will also involve discussions regarding property adjustments for the proposal and potential mitigation measures that can be implemented (Safeguard PL03).

2.17 Contamination

Submission number(s)

69, 101

Issue description

Two respondents suggested that the proposal would result in contamination of the environment. One respondent specifically requested that land remediation occurs.

Response

As summarised in Section 6.2 of this submissions report and Appendix N of the REF, safeguards and management measures are in place for the remediation of contaminated land. A Stage 1 Contamination Assessment (Appendix N of the REF) and Stage 2 Contamination Assessment (Section 5.3 and Appendix 4) has been carried out for the proposal, both of which have confirmed that the proposal site is suitable for use as a road and remediation of the land is not required.

To manage potential contamination impacts, a Contaminated Land Management Plan (CLMP) will be prepared in accordance with Safeguard CN02 in Section 6.2 of this submissions report. The CLMP will include but is not limited to measures to manage identified areas of elevated total coliforms and measures to manage potential contamination in agricultural areas. An 'unexpected finds' protocol will be implemented as part of the CLMP to plan for and accommodate potential contamination impacts (Safeguard CN06). Ongoing management and monitoring measures will be documented for any areas where minor, residual contamination remains following construction as per Safeguard CN05 in Section 6.2 of this submissions report.

2.18 Air quality

2.18.1 Construction Impacts

Submission number(s)

15, 23, 40, 46, 76, 82, 133

Issue description

Several respondents expressed concern over the potential for air quality impacts during construction, in particular:

- Increased traffic, construction vehicles and congestion during construction would lead to increased diesel exhaust emissions
- Increased dust, rubble and blast emissions.

Response

Transport acknowledges in Section 6.13 and Appendix O of the REF that the key air quality issue during construction of the proposal is expected to be dust generated from construction activities as well as from wind erosion of exposed areas. With the implementation of the measures and environmental safeguards outlined in Section 6.2 of this submissions report, significant air quality impacts associated with dust, exhaust emissions, odours, and airborne hazardous materials are not anticipated during the construction phase. An Air Quality Management Plan (AQMP) will be developed as a part of the Construction Environmental Management Plan (CEMP), in accordance with Safeguard AQ1, to mitigate construction air quality impacts. The AQMP will identify potential sources of air pollution, management methods during strong winds, a progressive rehabilitation strategy for exposed surfaces, and relevant guidelines.

Submission number(s)

15

Issue description

The respondent expressed concern about the health impacts that may arise as a result of reduced air quality during construction.

Response

Air quality impacts are summarised in Section 6.13 and Appendix O of the REF, the predicted changes in air quality as a result of the proposal show that adverse health impacts would not be expected. With the implementation of the measures and environmental safeguards outlined in Section 6.2 of this submissions report, significant air quality impacts associated with exhaust emissions are not anticipated during the construction phase. An Air Quality Management Plan (AQMP) will be developed as a part of the Construction Environmental Management Plan (CEMP), in accordance with Safeguard AQ1, to mitigate construction air quality impacts. To specifically address exhaust emissions from plant and equipment used during construction the following measures will be in place:

- Inspect all plant and equipment before it is used on-site (Safeguard AQ09)
- Ensure all vehicles, plant, and equipment operate in a proper and efficient manner (Safeguard AQ10)
- Switch off all vehicles, plant and equipment when not in-use (Safeguard AQ11)
- Avoid the use of diesel or petrol-powered generators and use mains electricity or battery powered (Safeguard AQ12).

2.18.2 Operational Impacts

Submission number(s)

15, 23, 40, 46, 102, 133

Issue description

Several respondents expressed concern over the potential for air quality impacts during operation of the proposal due to increased traffic.

Response

As summarised in Section 6.13 and Section 5.2 of Appendix O of the REF, the predicted changes in air quality as a result of the proposal show that adverse health impacts would not be expected. Modelling and traffic volume studies show that Great Western Highway traffic will continue to grow into the future in line with increased traffic demand and growth, with or without the highway upgrade (see Table 6-122 of the REF) hence development of the proposal would not alter the air quality of the local area during the operational phase.

2.19 Sustainability, greenhouse gas and climate change

2.19.1 Sustainability

Submission number(s)

16

Issue description

The respondent suggests the proposal does not adequately take environmental sustainability sufficiently into account. The respondent disagreed with the proposal's definition of sustainability as "making the best use of available resources and assets", suggesting it is narrow and solely focused on economic profit and asset maximisation.

Response

Section 2.1.2 of the REF included brief mention of sustainability as making the best use of available resources and assets, however, this definition was expanded upon in Section 6.16 of the REF. Sustainability is a broad term that considers a variety of social, economic and environmental factors. The proposal has developed six core principles to govern environmental and socio-economic outcomes and performances of the proposal. These principles are outlined in Section 6.16.3 of the REF and include:

1. Demonstrate leadership: deliver a world class road upgrade that is environmentally and socially conscious and demonstrates innovation.
2. Tackle climate change: integrate a comprehensive climate change response, and drive excellence in low carbon solutions
3. Manage resources efficiently: achieve whole-of-life value through efficient use and management of resources
4. Drive supply chain best practice: collaborate with key stakeholders to drive a lasting legacy in workforce development, industry participation and sustainable procurement.
5. Value community and users: respond to community and user needs, promote heritage, liveable places, and wellbeing for current and future generations.
6. Respect the environment: minimise impacts and take opportunities to provide environmental improvements.

A number of sustainability initiatives and targets have been developed to support the sustainability principles outlined above. Specific examples of how the proposal aims to action these initiatives and targets are outlined in Table 6-133 in the REF. Targets and initiatives have been incorporated into the safeguards and management measures (see Section 6.2 of this submissions report) and will inform the management plans to be developed for this proposal. These sustainability initiatives will be further refined during detailed design.

Submission number(s)

16

Issue description

The respondent noted that, in the absence of stringent decarbonisation policies for road transport, the proposal will support a further increase in greenhouse gas emissions through the facilitation of increased traffic volumes and travelling speeds. This is in contradiction to Australia's commitment to deliver emissions reductions in line with the spirit of the Paris Climate Agreement of 2015.

Response

Emission standards and decarbonisation policies are set by the Commonwealth government, and not at the State or proposal level.

Several safeguards were outlined in Section 6.2 of this submissions report which aim to reduce exhaust emissions during construction. Specifically, plant and equipment will be inspected before use (Safeguard AQ09), vehicles, plant and equipment will operate in an efficient manner (Safeguard AQ10), vehicles, plant and equipment will be switched off when not in use (Safeguard AQ11) and diesel or petrol powered generators will be avoided (Safeguard AQ12). Additionally, the following will be considered during detailed design to reduce greenhouse gas emissions:

- Carry out detailed modelling to ensure that cut and fill balances are managed to minimise any unnecessary movements of material (Safeguard GH01)
- Review opportunities to specify biofuel use on construction plant and equipment based on site for long periods (Safeguard GH02)
- Review opportunities to use alternative materials in construction (Safeguard GH03)
- Specify high recycled content in steel use (where technically possible and cost effective) (Safeguard GH04).

As stated in responses above, six sustainability principles have been developed to govern environmental and socio-economic outcomes and performances for the proposal. Targets and initiatives have been developed to support the sustainability principles as outlined in Table 6-133 of the REF. These initiatives and targets will be further refined as part of the design process and will include the provision of areas for EV charging, which supports the transition to higher EV use in NSW. These targets and initiatives have been incorporated into the safeguards and management measures (see Section 6.2 of this submissions report) and will inform the management plans to be developed for this proposal.

Submission number(s)

47, 60

Issue description

Two respondents suggest the proposed Great Western Highway Upgrade Program is not responsible planning as it would increase the amount of traffic on the road and does not support a move towards a more sustainable future. One respondent requested that public transport services were included within the proposal.

Response

The proposal was designed with a number of objectives in mind, namely, to improve transport network performance and efficiency along the corridor between Katoomba and Lithgow to ensure continuity and safety of transport and essential services (refer to Section 2.3.1 in the REF). The proposal has also been designed to accommodate the predicted increase in traffic and freight volumes (refer to Section 6.2 in the REF).

As described in Section 6.16.1 of the REF, the sustainability assessment broadly involved:

- Defining the sustainability context for the proposal within the broader context of NSW's objective of improving transport efficiency, and the relevant Transport policies and guidelines
- Reviewing the sustainability focus areas, associated objectives from the Great Western Highway Environment and Sustainability Policy and responding to how these focus areas apply to the proposal
- Identifying requirements for managing sustainability during detailed design, construction, and operation.

The assessment considered whole of life mitigation in response to the focus areas and objectives.

An Environment and Sustainability Policy has been developed to articulate the proposal's commitment to sustainable outcomes. This policy has been reproduced in Table 6-128 of the REF, and captures the social and environmental sustainability objectives of proposal.

As stated in responses above, six principles have been developed to govern environmental and socio-economic outcomes and performances for the proposal. The principles are designed to deliver on the Great Western Highway Environment and Sustainability Policy commitments and are described in Section 6.16.3 of the REF. Targets and initiatives have been developed to support the sustainability principles. These are outlined in Table 6-133 of the REF. These initiatives and targets would be further refined as part of the design process and would include the provision of areas for EV charging, which would support the transition to higher EV use in New South Wales.

Unfortunately, public transport services are outside of the scope of the proposal. However, as stated in responses in Section 2.2.5, the roads and trains arms of Transport for NSW are working closely on developing a multi-modal strategy for east west connections between Sydney and the Central West that makes the most of road and rail for both passengers and freight.

Submission number(s)

76, 164

Issue description

Two respondents request further information on the provision of electric vehicle charging stations along the upgraded highway.

Response

Transport recognises that there is to be anticipated growth in EVs in the next decades. During detailed design, the refined sustainability targets and initiatives will include the provision of areas for EV charging, which would support the transition to higher EV use in New South Wales.

Submission number(s)

101

Issue description

The respondent notes that they would like to view a policy in the REF on the use of recycled materials in roadworks.

Response

As described in Section 6.16.2 of the REF, under the Environment and Sustainability Policy for the Great Western Highway, Transport has adopted an approach to encourage a circular economy through the use of recycled materials in accordance with existing specifications. Transport has also developed targets and objectives to support the sustainability principles (refer to Table 6-133 in the REF). Namely, the proposal will look for opportunities to make use of recycled materials, identify pathways to pilot new technology and approaches, and identify principle waste streams and re-use opportunities. In particular, the proposal would aim to make use of recycled glass in asphalt pavement, fly-ash content/recycled glass in concrete, in accordance with Safeguards GH03 and GH04 in Section 6.2 of this submissions report.

2.19.2 Greenhouse gas emissions

Submission number(s)

16

Issue description

The respondent notes the construction and operation of the proposal is very resource and carbon intensive, highlighting in particular the GHG-intensive nature of concrete, the fuel emissions associated with heavy machinery and operational traffic exhaust emissions.

Response

Section 6.16 of the REF provides an assessment of the potential greenhouse gas emissions associated with construction and operation of the proposal. It is acknowledged in Section 6.16.3 of the REF that construction of the proposal would generate about 130,000 kilotonnes of carbon dioxide equivalent (CO_2e), predominantly from the embedded emissions in the materials used for construction. Traffic emissions account for the majority of emissions during the operational phase, which may decrease in response to changes to technology regarding road vehicles in Australia, but which is outside the scope of the proposal. The higher vehicle emissions, associated with combustion engine vehicles have therefore been presented in the REF.

Safeguards GH01 to GH07 in Section 6.2 of this submissions report have been identified where appropriate to address these impacts. These include adopting low emission materials and energy efficient technology and exploring renewable energy opportunities during the construction and maintenance of the proposal. As per Safeguard GH03 in Section 6.2 of this submissions report, alternative materials in construction, such as fly ash as a supplementary cementitious material (to replace traditional Portland cement) and reclaimed aggregate will be reviewed in the detailed design.

Table 6-128 in the REF summarises the social and environmental sustainability objectives of the proposal as per Transport's Environment and Sustainability Policy, which includes the minimisation of

energy use in operational assets and ensuring that the design will allow for the transition to EVs in the future through the future provision of charging stations. Additionally, Table 6-133 in the REF identifies specific targets and objectives developed for the proposal, which includes the objective to reduce energy use and carbon emissions through the use of energy efficient equipment, methods and practices, sourcing local materials where possible, and prioritising areas where the greatest reductions in carbon and energy can be achieved.

Submission number(s)

109

Issue description

The respondent suggests emissions targets should be considered as part of the proposal design.

Response

Vehicle emissions standards are set by the Commonwealth government and are outside the scope of the proposal. However, a number of sustainability initiatives and targets have been developed for the proposal with reducing energy use and carbon emissions in mind (refer to Table 6-133 in the REF). In particular, these include:

- Identifying and prioritising areas where the greatest reductions in carbon and energy can be achieved
- The use of energy efficient equipment, methods, and practices
- Maximising the use of lower emission materials in construction where appropriate
- Local sourcing of materials where feasible
- Minimising energy use in operational assets
- Adopting enabling technology where feasible.

Further refinement of these initiatives and targets will occur during detailed design.

As outlined in above responses and Section 6.2 of this submissions report, a number of safeguards have been developed to reduce greenhouse gas emissions. These include but are not limited to Safeguards GH02 and GH03, which aim to review opportunities to specify biofuel use on construction plant and equipment based on site and opportunities to use alternative materials in construction during detailed design.

Traffic modelling of future year periods indicates that the proposed upgrade would provide a reliable and more efficient road corridor on the Great Western Highway between Little Hartley and Lithgow. The provision of free flowing traffic will allow for less congestion and thus less greenhouse gas emissions.

2.19.3 Climate change

Submission number(s)

57

Issue description

The respondent indicates that the Coxs River habitat is already under threat due to climate change, drought, and pollution.

Response

The potential impacts of the proposal on the Coxs River were assessed in Section 6.6.3 of the REF. The main potential impacts to the Coxs River have been identified as water quality impacts from the transportation of soils and litter, stockpiling, vegetation clearing and concreting and steel works. Additionally, poor quality runoff may contain sediment that results in increased turbidity and poor water clarity impacting visual amenity and potentially leading to smothering of aquatic organisms. Increased sediment can result in increased construction of nutrients, metals and other contaminants that can be toxic to aquatic life, result in algal blooms and reduce dissolved oxygen concentrations.

These potential impacts would be mitigated via the Safeguards as outlined in Section 6.2 of this submissions report. Particularly, Safeguard SW01 states that a Construction Soil and Water Management Plan (CSWMP) would be developed as a subplan to the CEMP and will outline measures to manage water quality impacts associated with construction work. Further, Safeguard SW06 states a surface water quality monitoring program will be developed in accordance with the Guidelines for Construction Water Quality Monitoring (RTA 2003).

The effect of climate change was assessed throughout the REF during flood modelling, bush fire risk assessments and a general climate change risk assessment. The methodology adopted in assessing climate change risk was based on the Australian Standard AS 5334-2013 Climate change adaptation for settlements and infrastructure – A risk-based approach. The risk assessment is intended to form part of a risk management process which involves communication and consultation with the design team, relevant stakeholders such as Transport as well as regular monitoring and review of the risk assessment plan.

Additionally, several Safeguards have been identified in Section 6.2 of this submissions report to minimise the potential impacts of the proposal. Operational bushfire risks would be mitigated as per Safeguard BF05, grass within the highway corridor would be inspected and maintained at the commencement of the fire season to reduce fuel loading and the potential for fire ignition. Potential flooding impacts would be minimised with the implementation of safeguards HF01-HF04 which involve the upgrade of cross-drainage structures to cater for the 100-year storm events, design refinement of the embankment adjacent to Boxes Creek during detailed design, additional flood modelling and an eastward shift of the Kelly Street service road. Findings of the CCRA would be used to inform further design considerations, mitigation measures and management plans regarding flooding and bushfire risk management as per Safeguards GH05 and GH06 respectively.

Submission number(s)

59

Issue description

The respondent believes the proposal will impact the local climate and increase temperatures within the proposal area.

Response

As described in Section 6.16.2 of the REF, the Central West and Orana Region, within which the proposal is located, has a highly variable climate. Annual and seasonal rainfall and temperatures vary over a wide range. The area is periodically subject to extreme weather and climatic events which may disrupt the community, threaten health and safety and damage infrastructure and the environment. The region's climate is also changing, with signs evident in records of temperature. Those and other changes are projected to continue as increasing atmospheric concentrations of greenhouse gases drive warming and other changes in the climate system.

The proposal is not anticipated to directly influence climate conditions of the area. However, climate change is anticipated to have direct and indirect impacts on the proposal. The potential impacts of climate change on the proposal were outlined in Section 6.16.3 of the REF. Safeguard GH07 states that consideration of climate projections, flooding and bushfire risks would be adopted during detailed design and material consideration, as outlined in Section 6.2 of this submissions report.

Submission number(s)

101

Issue description

The respondent suggests that the proposal needs to take into consideration more extreme storm events and erratic weather patterns as a result of climate change, and notes that stormwater catchments will need to be designed for 1 in 500 year events.

Response

As described in Section 6.16.1 of the REF, the climate change risk assessment (Appendix Q of the REF) adopted the climate change scenario projections developed by NARCliM (NSW and ACT Regional Climate Modelling), a partnership led by the NSW government alongside the ACT and SA Governments as well as the Climate Change Research Centre at the University of NSW. The NARCliM model covers a number of meteorological variables, including air temperature, precipitation, wind speed, surface evaporation and soil moisture.

As described in Appendix K of the REF, a climate change estimate is required as per Transport's guideline Climate Change Adaptation for the Road Network. This guideline requires assessment of flood-related impacts and resultant risks. For risks exceeding a particular threshold ('low' as per RMS Risk Management guidelines), risk treatments are to be proposed. A climate change storm was modelled as per Transport's guideline Climate Change Adaptation for the Road Network. The future one percent Annual Exceedance Probability storm was amplified to the present day 0.2 per cent Annual Exceedance Probability storm (or 500-year Average Recurrence Interval storm). Flood level results for River Lett show that the nominated climate change event may result in an overall flood level increase of about 700 millimetres in the river (proposed minus existing, both under an increased rainfall intensity scenario). The potential flood level increase due to the proposal under the climate change scenario would be similar in pattern to the Design Flood Event but amplified along the river to about twice the length.

The predicted effects of climate change would not alter the potential flood risks associated with the proposal. Safeguard GH07 states that climate projections, flooding and bushfire risk will be taken into consideration during detail design and material consideration.

2.20 Cumulative impacts

2.20.1 Great Western Highway Upgrade Program

Submission number(s)

23, 90

Issue description

Two respondents were concerned about the cumulative impacts of the proposal on residents and businesses in the Hartley Valley.

Response

As assessed in Section 6.17 of the REF, cumulative impacts have been considered in their wider contextual surroundings and management measures are in place to mitigate these impacts. Mitigation measures will include, but are not limited to, ongoing coordination and consultation with nearby projects as required (safeguard CU01 in Section 6.2 of this submissions report), considering refinements during detailed design to reduce potential impacts where feasible (safeguard CU03 in Section 6.2 of this submissions report), and planning the construction of various segments of the proposal to avoid situations where sensitive receivers may be affected by emissions to air from multiple work areas (safeguard CU04 in Section 6.2 of this submissions report).

Submission number(s)

109, 119

Issue description

Two respondents believe that the proposal impacts should be assessed as a part of the larger EIS consideration.

Response

Transport has carried out a Review of Environmental Factors (REF) under the EP&A Act 1979 Division 5.1 and examined and taken into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity.

The statutory planning pathway for the Great Western Highway Upgrade Program – Little Hartley to Lithgow (West Section) was established in accordance with the EP&A Act and the Infrastructure SEPP (ISEPP) 2007. Clause 94 of ISEPP permits development on any land for the purpose of a road or road infrastructure facilities to be carried out by or on behalf of a public authority without consent. As the Proposal is for a road upgrade and duplication and is to be carried out by Transport, it can be assessed under Division 5.1 of the EP&A Act.

Additionally, the proposal is not likely to have an impact on matters of national environmental significance or the environment of Commonwealth land within the meaning of the EPBC Act. A referral to the Australian Government Department of Agriculture, Water and Environment was not required.

The proposal is only one part of the overall Great Western Highway Upgrade Program of works. Further upgrades have been proposed based upon available funding, project location, construction type and staging. Further upgrades including both the Katoomba to Blackheath (East), Blackheath to Little Hartley (Central) and Medlow Bath projects will also be subject to assessment in accordance

with the EP&A Act, with the appropriate statutory planning pathway selected as per each project's potential significance of impacts.

Submission number(s)

144

Issue description

The respondent believes that it is inappropriate to consider the environmental impact of this upgrade through a self assessment conducted by Transport. The respondent suggests that each of the elements of the larger upgrade are intrinsically connected therefore the environmental impacts of one cannot be assessed without consideration of the environmental impacts of the others. Further, it is noted that the REF contemplates the road accessing a tunnel at the foot of Victoria Pass without making any reference to the environmental impacts that may arise.

Response

As assessed in Section 6.17 of the REF, cumulative impacts have been considered in their wider contextual surroundings and management measures are in place to mitigate these impacts. Mitigation measures will include, but are not limited to, ongoing coordination and consultation with nearby projects as required (Safeguard CU01 in Section 6.2 of this submissions report), considering refinements during detailed design to reduce potential impacts where feasible (Safeguard CU03), and planning the construction of various segments of the proposal to avoid situations where sensitive receivers may be affected by emissions to air from multiple work areas (Safeguard CU04

Transport has carried out a REF under the Division 5.1 of the EP&A Act 1979 and examined and taken into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the proposal.

The statutory planning pathway for the Great Western Highway Upgrade Program – Little Hartley to Lithgow (West Section) was established in accordance with the EP&A Act and the ISEPP. Clause 94 of ISEPP permits development on any land for the purpose of a road or road infrastructure facilities to be carried out by or on behalf of a public authority without consent. As the proposal is for a road upgrade and duplication and is to be carried out by Transport, it is assessable under Division 5.1 of the EP&A Act.

Additionally, the project was not likely to have an impact on matters of national environmental significance or the environment of Commonwealth land within the meaning of the EPBC Act. A referral to the Australian Government Department of Agriculture, Water and Environment was not required.

The proposal is only one part of the overall Great Western Highway Upgrade Program of works. Further upgrades have been proposed based upon available funding, project location, construction type and staging. Further upgrades including both the Katoomba to Blackheath (East), Blackheath to Little Hartley (Central) and Medlow Bath projects will also be subject to assessment in accordance with the EP&A Act, with the appropriate statutory planning pathway selected as per each project's potential significance of impacts.

Cumulative impacts are assessed in Section 6.17 of the REF in accordance with Clause 228(2) of the EP&A Regulation 2000 and the *Cumulative Impact Assessment Guidelines for State Significant Projects* (DPIE, 2021). It is acknowledged that the proposal is not classified as a State Significant Development however, the Cumulative Impact Assessment Guidelines were adopted due to the potential for cumulative impacts associated with the development of the other components of the Great Western Highway Upgrade Program occurring both concurrently and in proximity to the proposal. While the

REF focuses on the potential environmental impacts of the proposal, Transport acknowledges that it important these potential cumulative impacts are considered in their wider contextual surroundings.

Where cumulative impacts have been identified, safeguards and management measures (as outlined in Section 6.2 of this submissions report) have been developed to minimise them. These include , but are not limited to, ongoing coordination and consultation with nearby projects as required (Safeguard CU01), considering refinements during detailed design to reduce potential impacts where feasible (Safeguard CU03), and planning the construction of various segments of the proposal to avoid situations where sensitive receivers may be affected by emissions to air from multiple work areas (Safeguard CU04).

Submission number(s)

23, 110

Issue description

Two respondents believe the proposal does not adequately consider the cumulative effects of the proposal.

Response

While the REF focuses on the potential environmental impacts of this proposal, it is important these potential impacts are considered in their wider contextual surroundings. Cumulative impacts are those that may not be considered significant on their own but that may be more significant when considered in association with other impacts. Cumulative impacts may occur as the result of the interaction of impacts within a single project or due to the combined effects of a number of projects occurring simultaneously in a given area.

In accordance with Clause 228(2) of the EP&A Regulation 2000, any cumulative environmental effects of the proposal with other existing and likely future activities must be taken into account in assessing the potential environmental impacts of the proposal.

Potential cumulative impacts associated with the proposal and the other projects identified in Table 6-137 are summarised in Table 6-138 of the REF. These potential impacts would be mitigated by the safeguards as outlined in Section 6.2 of this submissions report. Ongoing coordination and consultation will be carried out with nearby projects as required (Safeguard CU01). The CEMP will be revised to consider potential cumulative impacts from surrounding development activities as they become known (Safeguard CU02). Opportunities for further design refinements would be considered during detailed design to reduce potential impacts where feasible (Safeguard CU03). And where practical, plan the construction of the various segments of the proposal to avoid situations where sensitive receivers may be affected by emissions to air from multiple work areas (Safeguard CU04).

Submission number(s)

144

Issue description

The respondent is concerned that the proposal has suffered from a lack of cohesive analysis and states that the individual projects within the Great Western Highway Upgrade Program must be viewed collectively to understand its impact on non-Aboriginal heritage.

Cumulative impacts are assessed in Section 6.17 of the REF and Section 6.7 in Appendix H of the REF. This section considers the potential impacts of the proposal within the broader program of work and in consideration of other projects and developments within proximity of the proposal. As summarised in Table 6-138 of the REF, projects carried out within the vicinity of the proposal have had a minor impact on non-Aboriginal heritage in the region. Potential cumulative impacts include direct physical impacts to non-Aboriginal heritage items. Indirect visual impacts and vibration impacts would also be expected from nearby heritage items. Operational non-Aboriginal heritage impacts associated with nearby projects (refer to Section 6.17 of the REF) were assessed as being minor and therefore cumulative impacts on non-Aboriginal heritage would be minimal. Where there are impacts on non-Aboriginal heritage, safeguards and management measures will be in place to minimise these impacts as outlined in Section 6.2 of this submissions report.

Undertaking individual REFs for of the four sections of the broader Great Western Highway Upgrade Program allows for a more in-depth heritage assessment for the West Section. In contrast, if the wider program was considered in a single heritage assessment it is likely that some historical detail would be lost in the process.

To provide a clear visualisation of the proposal a fly-through was made available during community display which gives a corridor view of the proposal. This visualisation is still accessible on the Great Western Highway Upgrade Program West REF Web Portal.

2.20.2 Cumulative construction impacts

Submission number(s)

91, 95, 96, 102, 147, 161

Issue description

Several respondents expressed concern over the duration of construction activities, in particular:

- Noise impacts from trucks, blasting and machinery
- The duration of construction considering recent upgrades
- Impacts for local residents
- Increased traffic and congestion
- Comparison to the Forty Bends project.

Response

Upon further review, Transport has amended the construction program for the proposal to reduce the number of sections constructed from four to two (refer to Section 4 of this submissions report). Construction will start with the Coxs River Road section and once completed, Transport will deliver the Coxs River Road to Lithgow section as one package. The amended construction program is expected to minimise the duration of construction activities due to the higher concentration of works being completed over a shorter period. Construction of the Coxs River Road section is planned for 2023, though this will be subjected to planning approval.

Noise and vibration impacts are summarised in Section 6.3 and Appendix F of the REF. As per Safeguard NV12 in Section 6.2 of this report, road design features will be evaluated to minimise road traffic noise where necessary during detailed design. Any changes in design will include additional noise monitoring and necessary adjustments to the noise model. Transport will also conduct noise monitoring after construction and once traffic patterns have adjusted to the upgraded highway, to

validate the post-construction noise model. In the circumstance that the validation of the model indicates additional receivers are eligible to receive consideration of noise mitigation measures, these will be addressed at that time. Potential noise mitigation measures are to be considered in the following order of preference:

- At-source mitigation such as quieter road pavement surfaces
- In-corridor mitigation such as noise mounds and noise barriers
- At-receiver mitigation including at-property treatments, which involve architectural treatments to improve building elements such as doors, windows, and vents (Safeguard NV13).

Section 6.17 of the REF acknowledges that cumulative construction impacts associated with the proposal and previous projects can contribute to construction fatigue in residents. Impacts during construction will be minimised by implementing the Construction Environment Management Plan (CEMP) as per Safeguard GEN01 in Section 6.2 of this submissions report. Management measures to mitigate cumulative impacts will include, but are not limited to, ongoing coordination and consultation with nearby projects as required (Safeguard CU01), considering refinements during detailed design to reduce potential impacts where feasible (Safeguard CU03), and planning the construction of various segments of the proposal to avoid situations where sensitive receivers may be affected by emissions to air from multiple work areas (Safeguard CU04).

Overall, the proposal would result in a positive outcome for local residents. Reduction of through traffic, including heavy vehicles within the Little Hartley village would support safer access and enhanced amenity for residents and businesses within the village. The separation of local traffic and through traffic would also support safer access to properties and destinations in the study area, although this may require increased travel for motorists accessing some locations.

Traffic and transport impacts will be mitigated through the development and implementation of safeguards TT01 to TT07 in Section 6.2 of this submissions report.

2.21 Out of scope

2.21.1 Warragamba Dam

Submission number(s)

5, 79

Issue description

Two respondents have raised issues related to the Warragamba Dam, which is outside of the proposal area, as follows:

- Concerns about any implications of the potential future Warragamba Dam Wall raising project
- Suggestions that there have been reports of failed Aboriginal Heritage Assessments carried out for the Warragamba Dam Project.

Response

The proposal is not within the vicinity of the Warragamba Dam proposal, and it is unlikely that there would be any cumulative impacts. Whilst water reports to the Warragamba Catchment, the proposal is not anticipated to alter water quality or stormwater quantities entering the Dam. Consideration of the integrity of the Aboriginal Heritage Assessments carried out as part of the Warragamba Dam project is outside of the scope of this proposal.

2.21.2 COVID-19 pandemic

Submission number(s)

16

Issue description

The respondent states the proposal is based on outdated data as both the NSW State Infrastructure Strategy 2018-2038 and the Future Transport 2056 document were both published in 2018. The respondent suggests since these documents were published prior to the COVID 19 pandemic they are inaccurate for predicting economic growth, population growth, regional activity, traffic volumes, passenger, and freight movements. The respondent suggests since the pandemic is not over it is not justified to continue with the proposal without updating future projections. The respondent suggests in light of the COVID-19 pandemic future infrastructure spending should focus on sustainable projects, such as transitioning the energy systems to renewable energy.

Response

The proposal has been in planning for over a decade, predating the COVID-19 pandemic. Future projects would consider the potential effect of the COVID-19 pandemic on traffic data.

The NSW State Infrastructure Strategy and the Future Transport 2056 are both focused on long term infrastructure investment and land-use planning. Whilst COVID-19 has had a profound impact on our lives and the economy, meeting our future transport challenges remains a focus of the initiatives, solutions, and actions of Transport today.

The State Infrastructure Strategy aligns with the benefits of the proposal, such as improving travel times and improving road safety within the proposal area.

2.21.3 Great Western Highway Upgrade Program

Submission number(s)

23, 31, 35, 38, 47, 53, 54, 55, 60, 62, 76, 79, 80, 86, 87, 90, 91, 95, 96, 102, 103, 107, 109, 113, 116, 119, 120, 131, 132, 138, 140, 142, 147, 171

Issue description

Several respondents raised several issues in relation to the tunnel works occurring at the Central Section – Blackheath to Little Hartley. These include:

- The tunnel will not be available to heavy vehicles carrying flammable or explosive goods and therefore would need to continue using the existing highway
- Concerns regarding potential air pollution as a result of the tunnel ventilation and vehicle emissions. Request for Transport to consider the cumulative impacts of tunnel construction works and operation
- Environmental impacts from the construction and operation of the tunnel on the Hartley Valley
- The substantial number of truck movements and facilities associated with tunnel construction
- Concerns about the Hartley Valley becoming a major construction zone for tunnel works
- Concerns that the tunnel proposed as part of the Great Western Highway Upgrade Program has not been properly budgeted
- Concerns that the tunnel under Blackheath will not be funded or built within the next two decades, and that the government will be in deficit for decades
- Request for a well-planned landscape design for the bottom of Mount Victoria pass where the proposed tunnel is located
- The upgrades to Blackheath and Mt Victoria are not dependent upon the proposal and can achieve most of the proposed benefits of the current proposal
- Query regarding how will tunnelling and earthworks will affect the historic Berghofers pass and convict bridge
- Request for the tunnel to start after Katoomba to preserve Medlow Bath
- Concerns that the REF does not deal with the proposed upgrade between Victoria Pass and Evans Lookout Road.

Response

The REF assessed the potential environmental impacts of the upgrade of the Great Western Highway between Little Hartley and Lithgow (West section).

The proposed tunnel forms part of the Central Section – Blackheath to Little Hartley and will be assessed in a separate environmental impact statement. Therefore, the issues raised are outside the scope of this proposal.

The NSW Government has progressively upgraded sections of the Great Western Highway to make it safer and more reliable for all road users. The broader program will complete the final 34 kilometre connection of a modern dual-carriageway link across the Blue Mountains.

The Great Western Highway Upgrade Program consists of:

- Medlow Bath Upgrade
- East Section – Katoomba to Medlow Bath and Medlow Bath to Blackheath
- Central Section – Blackheath to Little Hartley
- West Section – Little Hartley to Lithgow (the proposal).

These four proposals (described in Table 6-137 of the REF) will be occurring both concurrently in timeframe and consecutively geographically and have the potential to result in cumulative impacts to local communities as well as road users throughout the Blue Mountains area.

Each proposal would be subject to a separate environmental assessment in accordance with the EP&A Act. The EIS for the Central section of the Great Western Highway Upgrade Program will need to consider the cumulative impacts of vehicle movements from the West.

The Great Western Highway Upgrade Program was developed around the following objectives to deliver benefits to the community:

- Improving economic development, productivity, and freight accessibility in and through the Blue Mountains
- Improving the resilience of the corridor between Katoomba and Lithgow to ensure continuity and safety of transport and essential services
- Improving the transport network performance and efficiency along the corridor between Katoomba and Lithgow to meet the needs of all our customers
- Improving the safety of the corridor for all transport users between Katoomba and Lithgow
- Enhancing the liveability and being sensitive to the unique environmental and cultural assets along the corridor between Katoomba and Lithgow.

Submission number(s)

109

Issue description

The respondent believes that the REF does not assess the benefits or difficulties of upgrading the alternate State Road route. The respondent believes that if the proposal goes ahead, alternatives to the proposed Mount Victoria Tunnel option cannot be properly considered.

Response

The design process including consideration of alternative routes were outlined in Section 2.4 of the REF. Initially, five potential corridor options were considered. Following a review of the corridors, four modified corridors were confirmed and placed on display in April 2009. In August 2009, the NSW Minister for Roads announced that the plans for the upgrade of the Great Western Highway between Mount Victoria and Lithgow would concentrate solely on the corridor along the existing highway, known as the modified orange corridor. However, it should be noted that upgrades to alternative routes may be considered by Transport in future discussions.

The development of route options within the modified orange corridor included community submissions and involvement in workshops, field investigations and engineering design, and culminated in the announcement of various route options and sub-options in October 2009.

Following further community consultation and a technical workshop was held in November 2009 in which the route options were assessed based on a previously established evaluation criteria considering business impacts, residential impacts, visual impacts, heritage, ecology, sense of place and value for money.

The Preferred Route was used as a basis for the development of the Concept Design. A limited options development phase was carried out prior to the development of the Concept Design. This was to ensure the most effective option that best met the proposal objectives was taken forward into design development.

Submission number(s)

102

Issue description

The respondent suggests that the proposal will impact water courses across the Hartley Valley floor. The respondent states that the design is connected to the proposed tunnels but notes there is no mention of the tunnel's impacts on the water catchment that leads into Butler Creek. The respondent is concerned about the impact on residents, livestock and pastures, particularly since the Valley is already prone to flooding.

Response

The proposal will not result in any cumulative operational and construction flooding impacts with the Central Section – Blackheath to Little Hartley component of the Great Western Highway Upgrade Program. As described in sections 6.8 and 6.17 of the REF, floodwater would be conveyed across the proposed alignment without significant change in all but the most extreme flood events and would not result in any cumulative operational flooding impacts. Additionally, as described in Section 6.17 of the REF, cumulative construction soil and surface water quality impacts would be minimal, and would relate to the risk of runoff, accidental leaks or spills and erosion from areas that have not been stabilised adequately. These risks would be managed through the implementation of safeguards SW01, SW02 and SW07 in Section 6.2 of this submissions report. Impacts from the tunnel operations as a part of the Central Section - Blackheath to Little Hartley will be detailed in the Environmental Impact Statement to be exhibited for consultation mid 2022 (refer to Table 6-137 of the REF).

Submission number(s)

35

Issue description

The respondent has observed construction occurring at the base of the Pass and into the property where the tunnel work is going to occur. The respondent questions whether construction work is already occurring when the proposal is at the concept design stage.

Response

Investigation works have commenced for the Great Western Highway Upgrade Program, but construction has not begun on the tunnel. These works can't commence without environmental approval.

2.21.4 Speed limits and speed cameras

Submission number(s)

13, 159

Issue description

The respondent suggests that the speed limit on Mudgee Street should be less than 40 kilometres per hour. One respondent opposes the speed limit of 80 kilometres per hour and the collection of fines from motorists.

Response

The proposal does not involve changes to Mudgee Street which would warrant a change in speed limit. Therefore, the speed limit on Mudgee Street will not change from its current 50 kilometres per hour unless determined by Lithgow Council.

The posted speed limit of the proposal at South Bowenfels will remain unchanged at 80 kilometres per hour. The remainder of the highway between Forty Bends and the bottom of Victoria Pass will be posted between 90 to 100 kilometres per hour. The speed limits are considered suitable based on the proposed design.

Submission number(s)

159

Issue description

The respondent opposes the use of speed cameras on straight downhill runs.

Response

Speed cameras are not currently proposed as part of the proposal design. However, the use of speed cameras within the proposal area may be introduced in the future.

2.21.5 Request for standalone Aboriginal heritage Act

Submission number(s)

23

Issue description

The respondent requests that the NSW Government to create and give the Aboriginal people their own Cultural Heritage Act rather than coming under the outdated and un-representative National Parks and Wildlife Act.

Response

This request is outside of the scope of the proposal.

2.21.6 General

Submission number (s)

31, 36, 38, 58, 90, 91, 95, 102, 103, 105, 107, 113, 120, 124

Issue description

The respondent raises concerns about the increasing local population in Hartley Valley due to subdivisions and housing estate construction.

Response

Considerations of subdivision and housing estate construction leading to population growth in the Hartley Valley is outside of the scope of the proposal. However, Transport recognises future population growth in the region is to be expected. The proposal is designed to address this projected increase in population and traffic volumes to provide a safe and efficient road corridor on the Great Western Highway between Katoomba and Lithgow.

As stated above and described in Section 6.10.3 of the REF, during operation the proposal would support safer and more reliable access to properties and destinations through improved road conditions and the separation of local traffic and through traffic for much of the Little Hartley to River Lett stage of the proposal. The Great Western Highway will be used for through traffic, whilst service roads will be used primarily for local traffic.

Submission number (s)

13

Issue description

The respondent requests marked parking be included in front of the Bowenfels Presbyterian Church.

Response

The proposal does not involve any works at the Bowenfels Presbyterian Church. Any requests for upgrades to the church facilities is outside the scope of the proposal and should be forwarded onto the Church itself or the Lithgow City Council.

Submission number(s)

22

Issue description

The respondent suggests banning the use of Jacob brakes/ auxiliary braking devices along the road to minimise road traffic noise.

Response

Noise emissions from heavy vehicles are regulated in NSW under the Australian Design Rule ADR 83/00, and the Protection of the Environment Operations (Noise Control) Regulation 2008. Changes to road regulations are beyond the scope of the proposal.

Submission number(s)

159

Issue description

The respondent suggests putting road signs reading ‘let it roll’.

Response

There are no authorised road signs reading "let it roll" for trucks and heavy vehicles. These signs would not be incorporated into the proposal design.

Submission number (s)

158

Issue description

The respondent suggests the provision of maps of the local area to boost tourism.

Response

The proposal is currently in a concept design phase, which will continue to be developed and finalised during detailed design. Transport is currently developing an Urban Design Strategy for the Great Western Highway Upgrade Program that will incorporate Aboriginal and non-Aboriginal heritage. Transport is also working with the local government to develop ideal landscaping plans for the construction footprint.

Further opportunities for encouraging tourism in the local area will be explored during detailed design.

Submission number(s)

12, 21, 45, 47, 54, 57, 60, 69, 97, 111, 113, 131, 132, 135, 159, 164, 167

Issue description

In summary, several respondents raised the following issues:

- Requests for the Hartley village centre to be further developed and built off its colonial history
- There are too many school zones, speed zones and high density residential areas on the Great Western Highway through the Blue Mountains for it to be a major highway route
- The roads are not maintained or repaired as required in the Lithgow LGA. Money should be better spent on community, businesses, existing roads and health resources in other areas of the LGA
- Suggestion to include the intersection of Mudgee Street and Old Bathurst Road in the proposed upgrade
- The proposal will create short term jobs, but long-term employment is necessary to transition away from coal
- Opposition to the proposed quarry
- Concerns regarding the effectiveness of stormwater infrastructure installed as part of previous Forty Bends safety upgrades
- Request for a superhighway from Sydney to the Central West that does not go through the Blue Mountains towns
- The travel time from the central west to Sydney will take at least one hour due to the speed limit, traffic, pedestrian lights, and school zones
- Roads outside of the proposal are in greater need of an upgrade
- Request to avoid the current Mitchell's Pass descent before damaging the heritage-rich Valley.
- Opposition to accident damaged cars left on the side of the road
- Concerns about toll prices
- Request for the NSW Government to include a feasibility study for a proposed Wiradjuri Plains Project, a 'new 21st Century City just west of Lithgow'
- Request for a recycling hub in Lithgow.

Response

The comments listed above are noted, however, are outside the scope of this proposal and therefore, have not been considered any further.

Regarding the concern for damaged cars being left on the side of the road, the removal of these cars is under the jurisdiction of the car owners, not Transport.

3. Response to agency issues

In addition to the 173 community submissions addressed in Section 2, Transport received four agency submissions. Table 3-1 lists the agencies and their respective allocated submission number. The table also indicates where the issues from each submission are addressed in this report.

3.1 Overview of agency issues raised

A total of three government agency submissions were received in response to the display of the REF.

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. Each submission is outlined word for word and individual responses have been provided specific to each submission. The issues raised by agencies and Transport's response to these issues forms the basis of this section.

Lithgow City Council support the proposal, and WaterNSW and NPWS offered no position.

The most common issues raised by agencies are listed in Table 3-1.

Table 3-1: Summary of government agency issues

Respondent	Submission number	Section addressed	Issues raised
WaterNSW	48	3.2	• Soils and surface water
National Parks and Wildlife Services (NPWS)	139	3.3	• Preservation of local biodiversity • Potential impacts to Non-Aboriginal heritage
Lithgow City Council	181	3.4	• Potential impacts to Aboriginal heritage • Need and options considered

3.2 WaterNSW

3.2.1 Soils and surface water

Issue description

A construction soil and water management plan (CSWMP) is proposed to be prepared for this proposal as a subplan to the CEMP (p.286). Considering the potential impact on water quality flowing to the Sydney Drinking Water Catchment, WaterNSW requests the opportunity to review and provide comment on the CEMP.

Response

Section 6.6 of the REF discusses the potential soil and surface water impacts as a result of the proposal. As discussed in section 6.6.3, the proposal lies inside the Sydney Drinking Water Catchment and therefore would be required to satisfy the requirements of the Drinking Water Catchment SEPP.

A Construction Soil and Water Management Plan (CSWMP) will be developed as a subplan to the CEMP and will outline measures to manage water quality impacts associated with construction work (Safeguard SW01 in Section 6.2 of this submissions report).

Transport will continue to work closely with WaterNSW through all stages of the proposal and would provide the CSWMP to WaterNSW for review and comment.

Issue description

A large number of temporary and permanent sediment and water quality treatment basins are proposed; however no maintenance responsibilities have been identified. Details of their construction and operational maintenance responsibilities should be detailed in the proposed CSWMP and any ongoing Operational Environmental Management Plan (OEMP). WaterNSW supports the implementation of mitigation and operational management and maintenance measures that will lead to a beneficial effect on water quality outcomes.

Response

Once construction has been completed, the operational sediment and water quality basins will be handed over to the assets and operations division of Transport. The asset will then be managed under general road maintenance guidelines. Details of the maintenance of the sediment basins during construction will be included in the CSWMP.

Issue description

Should hydrocarbon removal (via an oil and water separator) be implemented, this will add significantly to the basins' maintenance and future functionality and should be considered in detailed design. This is currently only discussed in terms of spills and leaks (in the Neutral or Beneficial Effect Assessment, Appendix C).

Response

Construction phase sediment basins and permanent dry biofiltration basins are proposed to ensure that hydrocarbons are removed and that runoff meets the relevant water quality criteria. Some sediment basins would be converted to permanent dry biofiltration basins at the completion of

construction. Transport acknowledges the risk of hydrocarbon introduction into the environment during construction in Section 6.6. of the REF and will take this into further consideration during development of the CSWMP and CEMP.

Issue description

WaterNSW notes a beneficial effect is expected in the NorBE assessment. Note that quantity of runoff associated with both the construction phase (p.154) and operational phase must also be considered to achieve that beneficial effect as part of the more detailed NorBE assessment at detailed design stage (Safeguard SW03; p.288). This detailed NorBE assessment should include MUSIC stormwater modelling and provision of a .sqz file for WaterNSW's review. Quality of runoff proposed to be discharged to existing waterways through the cross and longitudinal drainage (p.42) must also be considered to ensure achievement of NorBE.

Response

As discussed in Section 6.6.3, 6.7.3 and Appendix C of the REF, a NorBE assessment was carried out for the proposal. The NorBE assessment showed that without mitigation the proposal would increase the pollutant loads in comparison to the existing conditions. However, once the proposed mitigation measures are implemented the pollutant loads are reduced to a level that is better than the existing conditions. As stated in Safeguard SW03, the NorBE assessment will be carried out during detailed design. This safeguard has been revised to further detail the requirements for this assessment, including the need for consultation with WaterNSW and required runoff quantity and quality assessments:

> **Safeguard SW03**: A further NorBE assessment will be carried out during detailed design to confirm the location, size and type of water quality basins required for operation of the proposal. This will include, but not be limited to, an assessment of the following to demonstrate achievement of NorBE:
>
> - the quantity of runoff associated with the construction and operational phase.
> - the quality of runoff proposed to be discharged to existing waterways through cross and longitudinal drainage.
>
> MUSIC modelling carried out for this assessment will be made available to WaterNSW for review.

Issue description

The REF identifies that the proposed ancillary facilities would be used for the storage of chemicals and hazardous materials. WaterNSW requests that all refuelling, oil changes and vehicle wash-downs are also conducted within the ancillary facilities and appropriate mitigation measures are adopted to minimise spills and leaks at all other operational locations.

Response

Ancillary facilities to be utilised during construction of the proposal are described in Section 3.4 of the REF. The ancillary facilities would include, but are not limited to, secure and bunded storage areas for hazardous materials, including fuels and chemicals, and plant and equipment laydown areas. Section 6.6.3 of the REF identifies accidental spills or leaks of fuels and/or oils from the maintenance or refuelling of construction plant, equipment, and vehicles in the ancillary facilities as having the potential to impact surface water quality. Additionally, Section 6.15.2 of the REF identifies wastewater generated from washdown within ancillary facilities as a potential waste stream. All refuelling,

maintenance and washdown of construction plant, equipment and vehicles would be carried out within appropriately bunded areas to minimise spills and leaks. Safeguard SW01 has been revised to reflect this as follows:

> **Safeguard SW01**: A Construction Soil and Water Management Plan (CSWMP) ~~would~~ will be developed as a subplan to the CEMP and will outline measures to manage water quality impacts associated with construction work. The CWSMP will provide:
>
> - An Erosion and Sediment Control Plan (ESCP) including measures to mitigate erosion and sediment transport both within the construction footprint and offsite including requirements for the preparation of erosion and sediment control plans for all progressive stages of construction and the implementation of erosion and sediment control measures including the use of sediment basins
> - Erosion and sediment control measures which would be implemented and maintained in accordance with Managing Urban Stormwater – Soils and Construction, Volume 1 (Landcom, 2004) and Volume 2D (DECC, 2008)
> - Specified secure and bunded areas within ancillary facilities for refuelling, maintenance and washdown of construction plant, equipment, and vehicles
> - Measures to manage stockpiles including locations, separation of waste types, sediment controls and stabilisation
> - Measures to manage waste including classification and handling of spoil
> - Measures to manage tannin leachates
> - Measures to manage accidental spills including requirement to maintain materials such as spill kits, an emergency response procedures and regular visual water quality checks when working near waterways
> - Controls for sensitive receiving environments which may include but not be limited to designation of 'no go' zone for construction plant and equipment (where application).

Issue description

In addition to diversion equipment as a safeguard, a spill kit is to be immediately available to all site workers where refuelling of equipment is undertaken.

Response

As described in Safeguard SW01 in Section 6.2 of this submissions report, spill kits will be maintained on site and available to all site workers as required in the event of an accidental spill, including during refuelling at ancillary facilities.

Issue description

Appropriate erosion and sediment controls, and tannin leachate controls must be implemented and maintained to manage runoff from the stockpiles (soil and vegetation) in ancillary areas.

Response

As described in Safeguard SW01 in Section 6.2 in this submissions report, the CSWMP will include an Erosion and Sediment Control Plan (ESCP) and measures to manage tannin leachates that will be implemented across the proposal construction footprint.

Issue description

All areas used for stockpiling should be rehabilitated after construction is concluded.

Response

As described in Section 3.4 of the REF, dedicated stockpile sites would be included within the ancillary facilities. The finishing works construction phase (Section 3.3.1 of the REF) would include the decommissioning and rehabilitation of ancillary facilities.

As described in Safeguard LV01 in Section 6.2 of this submissions report, an Urban Design Plan will be prepared that will include details of the staging of landscaping works. Additionally, Safeguards BI06 and BI10 commit to re-establishing native vegetation and habitat in accordance with relevant guidelines. Safeguard LV02 affirms that residual land would be developed to complement the existing landform and that detailed design would seek to maximise revegetation and planting opportunities.

3.2.2 REF Clarification

Issue description

All references to the Sydney Catchment Authority (pp.iii, 75, 494) should be amended to WaterNSW – the SCA was abolished in 2015.

Response

It is acknowledged that Section 4.1.1 REF incorrectly refers to the Sydney Catchment Authority when discussing the SDWC SEPP. The Sydney Catchment Authority was abolished in 2015 and should be referred to as WaterNSW. This clarification does not alter the impact assessment carried out for the REF.

3.3 NSW National Parks and Wildlife Services (NPWS)

3.3.1 Statutory and planning framework

Issue description

There remains ambiguity in the REF over the level of assessment required (e.g. section 4.2.5, p. 81) which states "unless the proposal is State Significant Infrastructure and assessed under Part 5.2 of the EP&A Act". Section 6.17.2 (p. 425) of the REF provides that "Each proposal would be subject to a separate environmental assessment in accordance with the Environmental Planning and Assessment Act 1979." However, it is unclear the section of this Act that allows for a single project (upgrade of the Great Western Highway between Katoomba and Blackheath) to be assessed across multiple environmental impact assessments.

Response

The planning approval pathway for the proposal is discussed in detail in Section 2.4.1 of this submissions report. In summary, Clause 94 of ISEPP permits development on any land for the purpose of a road or road infrastructure facilities to be carried out by or on behalf of a public authority without consent. As the proposal is for a road upgrade and duplication and is to be carried out by Transport, it can be assessed under Division 5.1 of the EP&A Act. Transport has carried out a REF under the Division 5.1 of the EP&A Act and examined and taken into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity.

The Great Western Highway Upgrade Program is being carried out in stages, and therefore each stage is subject to separate environmental assessment and approval in accordance with the EP&A Act. Additional upgrades within the Program include the Medlow Bath project, Katoomba to Blackheath (East) and Blackheath to Little Hartley (Central) which are subject to the appropriate statutory planning pathway selected as per each project's potential impacts. Though it is not a requirement for a Division 5.1 proposal, the newly released Cumulative Impact Assessment Guidelines for State Significant Projects (DPIE, 2020) has been used as a guide for the assessment of cumulative impacts associated with the proposal. As discussed in Section 6.17.2 of the REF, the four proposals would occur both concurrently and consecutively geographically, therefore the cumulative impacts have been considered.

3.3.2 Consultation

Issue description

NPWS appreciates the opportunity to provide comment on the REF for this proposal. It is noted that NPWS has provided previous comments on the proposed 'West Section' of the Great Western Highway Upgrade project as consultation under *State Environmental Planning Policy (Infrastructure) 2007* and has also provided comments on the draft sections of this REF that involve revocation of NPWS estate.

Response

Previous consultation between NPWS and Transport is documented in Table 5-4 of the REF. Additionally, Transport commenced consultation with NPWS separately in September 2021 regarding the revocation of portions of the NPWS estate, the Hartley Historic Site, as identified in Figure 3-1 and described further in Section 3.3.3. The revocation process is ongoing and no works for the proposal

would occur on the land identified for revocation until the revocation process and amendment to the State Heritage curtilage is complete.

Issue description

As an adjoining landowner, NPWS appreciates TfNSW's previous referrals and current level of communication regarding the Great Western Highway Upgrade Project, however it is noted that some of NPWS recommendations have not been included in the exhibited REF. NPWS would appreciate ongoing communication regarding the project to ensure the upgrade works are carried out in a safe and environmentally sensitive manner where they are adjacent to park. Given the obvious community interest around the park, there should also be a communication strategy aimed at the general public.

Response

Transport is committed to ongoing consultation with NPWS and the local community as summarised in Section 5.5.1 of the REF. A CCS will be developed by the construction contractor in accordance with Safeguard SE01 to keep residents and road users up to date about construction progress. This will include:

- Consultation with community stakeholders to help manage impacts during construction
- Notifying residents when work is proposed to start
- Notifying residents of night work
- Notifying residents of access issues.

NPWS is listed as a government agency in Section 5.5.1 of the REF and thus, is included in the community consultation list in safeguard SE01. In accordance with the requirements of clause 16 of the ISEPP, Transport is committed to ongoing consultation with NPWS.

Issue description

Provide a copy of the final REF once determined by TfNSW, for NPWS records.

Response

This submissions report will be available for public review on the Great Western Highway Upgrade Program West website in April 2022.

Issue description

Ensure notification from TfNSW occurs at least 4 weeks before works commence adjacent to park. The notification should include relevant contact details of the:

(a) TfNSW communications team and direct website links to the project page to assist in the management of any public enquiries received regarding the project

(b) TfNSW project coordinator as the primary contact for NPWS during project delivery

(c) onsite primary contractor delivering the project works adjacent to the park, to assist in any incident management.

Take appropriate steps to inform the community and any relevant key local groups about the proposed works, well in advance of the works commencing.

Response

As outlined in Safeguard GEN02 in Section 6.2 of this submissions report, five days' notice is generally standard practice, however Transport is willing to provide four weeks notice. The notification will include relevant contact details of the:

- Transport communications team and direct website links to the proposal page to assist in the management of any public enquiries received regarding the proposal
- Transport project coordinator as the primary contact for NPWS during proposal delivery
- Onsite primary contractor delivering the project works adjacent to the park, to assist in any incident management.

Community consultation will be ongoing for the proposal and will be carried out in accordance with the CCS as required by Safeguard SE01 in Section 6.2 of this submissions report.

3.3.3 Proposal description

Issue description

Hartley Historic Site relies on water supply secured from the River Lett. The REF fails to identify the potential impacts of the revocation and the proposed road infrastructure on provision of water to Hartley Historic Site.

Response

Transport has already completed an upgrade to the water supply infrastructure in question. The proposal includes provision of an all access road to ensure access is maintained. No further impacts to this infrastructure are anticipated as a result of the proposal.

Issue description

The REF does not include alternative options that have been explored to avoid the park (including at a micro siting scale) or a clear justification of the siting of components of the project infrastructure necessitating revocation.

Response

Proposal alternatives and options considered are discussed in Section 2.4.1 of the REF, including a summary of the corridor and route options assessments in Table 2-3. The main alignment of the proposal is located on lands proposed for revocation. No ancillary sites are proposed to be located on land within the Hartley Historic Site and there are safeguards included in Section 6.2 of this submissions report to avoid locating ancillary facilities on or near to sensitive receivers (such as Hartley Historic Village) or areas of native vegetation (see Safeguards BI03, LV02 and AQ08). Options to reduce the proposal construction footprint within the curtilage of the Hartley Historic Site will be further considered during detailed design, as required by Safeguard NH06. as described in Section 2.4.1 of the REF, the Study area investigations and corridors identification report explored different corridor options and alternative routes. The 2008 investigation included three phases, being:

- Phase 1 involved confirming the adequacy of the existing background information to assist in identification of feasible corridors.
- Phase 2 consisted of additional desktop and field investigations to aid in the identification of feasible route options.
- Phase 3 involved desktop and field investigations to confirm the selection of the preferred route.

Initially four potential corridors were proposed which were compared based on their potential environmental impacts. Based on these investigations the present design was decided upon as it had the least environmental impacts and best satisfied the proposal objectives.

Issue description

NPWS estate is not correctly identified in the REF. For instance, Figure 3-1 d (p. 25) appears to contain the following errors:

- the extent of Hartley Historic Site as reserved under the NPW Act identified on the map is inaccurate and appears to be based instead on land zoned C1 National Parks and Nature Reserves under Lithgow Local Environmental Plan 2014.
- the map legend identifies “Hartley Historic Village” however does not depict the land reserved as Hartley Historic Site to the north of the current Great Western Highway alignment (i.e. the lands proposed to be revoked). This is an inaccurate depiction of current land tenure as the land has not yet been revoked. It also does not allow for an understanding (including by the public while the REF is being exhibited) of the land reservation changes the proposal would necessitate.
- it is recommended the map also include the identification of the curtilage of the State Heritage listed Hartley Historic Site.

Response

It is acknowledged Figure 3-1d of the REF identifies the LEP heritage of the Hartley Historic Site however incorrectly states this land is NPWS land. The SHR curtilage that is NPWS land is identified and assessed in Figure 6-19, Section 6.5 and Appendix H of the REF. For clarity, the SHR curtilage is also shown in Figure 3-1 of this submissions report.

The land to be revoked is also identified in Figure 3-1 of this submissions report.

Issue description

Further encroachments to lands reserved under the NPW Act are not permissible aside from the area of land proposed for revocation (north of the current highway alignment), no further encroachments to park are permissible. NPWS original responses recommended that the construction and operational footprint of the Great Western Highway upgrade is to be identified in relation to the existing legal boundary of the highway corridor and NPWS managed lands (including areas of park proposed for revocation). However, the exhibited REF does not include clear mapping that confirms no encroachments to the parts of Hartley Historic Site not subject to revocation are proposed.

Response

The proposal construction and operational footprint is shown in Figures 3-3 a to d of the REF. For clarity, Figure 3-1 in this submissions report shows the proposal and the construction footprint in relation to the SHR heritage curtilage of the Hartley Historic Site. Other than land proposed for revocation, no other land within this curtilage or other land reserved un under the NPW Act would be directly impacted by the construction or operational footprints of the proposal.

Issue description

NPWS also recommended that an adequate description of the proposed activity and a complete scope of works should be provided and that the description must clearly specify what works (if any) will directly affect park.

Response

A description of the proposal is provided in Section 3 of the REF. Impacts to NPWS lands, namely the Hartley Historic Site, are described in Table 6-73 and include:

- direct impact and need for revocation of the heritage curtilage to the north of the existing highway alignment
- potential visual impacts due to the location and size of the proposal
- potential vibration impacts on buildings within the site
- potential to impact subsurface remains on the lands to the north of the existing highway alignment during earthworks.

Several safeguards would be put in place to mitigate these potential impacts as outlined in Section 6.2 of this submissions report. In particular, options to reduce the construction footprint within the SHR curtilage is to be considered at Hartley Historic Site (Safeguard NH06). Where possible, new batter slopes and embankments will be blended with existing topography (Safeguard NH10) to minimise visual impacts on historic sites. A dilapidation report will be prepared for the Hartley Historic Site as it is considered “sensitive” to vibration impacts during construction and operation (Safeguard NH13). Potential visual impacts of the proposal would be mitigated through the implementation of Safeguard LV02 during detailed design.

No direct impacts to the National Park, outside of land proposed for revocation, would occur as part of the proposal.

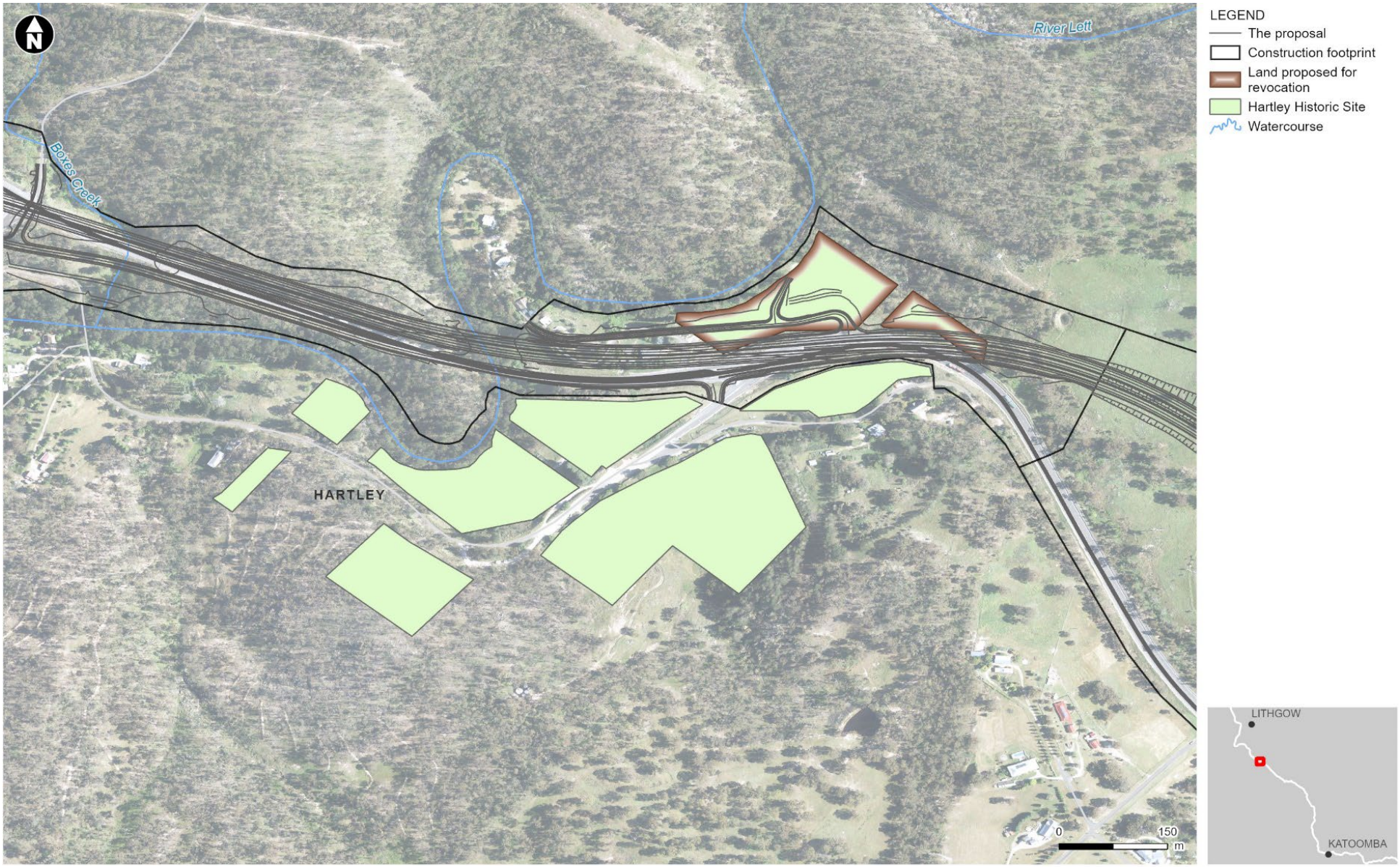

Figure 3-1: Hartley Historic Site curtilage and land subject to revocation

Issue description

The mapping associated with the REF does not provide clarity on these concerns. For instance, Figure 3-3 b Proposal construction footprint (p. 48) shows a proposed construction footprint that appears to encroach onto the area of park not proposed for revocation (i.e. to the south of the existing highway alignment). It is not even clear from the mapping given the scale and quality of the maps exhibited whether the former Royal Hotel is excluded from the construction footprint. Similarly, Figure 1-3 Subject land (p. 26) in the Biodiversity Development Assessment Report (BDAR) (Appendix D of the REF) does not clearly exclude NPWS estate from "subject land", which is defined in Section 1.2.1 of the BDAR (p. 25) to include the construction and operational footprints of the proposal.

Response

The Royal Hotel is excluded from the construction footprint and there will be no direct impacts. The heritage curtilage behind the Royal Hotel will be slightly truncated by the proposal. Removal of existing vegetation and limited opportunity for landscape mitigation may result in visual impacts on the land adjacent to the Royal Hotel. As described in Section 1.2.1 of the BDAR, the subject land, a term prescribed by the Biodiversity Assessment Method (BAM), encompasses the construction and operational footprints of the proposal. As stated above, the proposal would not impact NPWS land other than that proposed for revocation.

Figure 3-1 provides more detailed mapping of the subject land / construction and operational footprint of the proposal at the Hartley Valley Historic Site, based on the mapping shown in Figure 3-3b of the REF and Figure 1-3 of the BDAR.

Issue description

The existing and proposed utilities mapping (Figure 3-4 c Existing and proposed utilities, p. 70) is also unclear. It appears to depict significant infrastructure traversing Hartley Historic Site south of the current highway alignment however given the map quality it cannot be determined whether the mapped utilities are existing (retained) or proposed.

Response

The existing utilities within the Hartley Historic Site to the south of the current highway alignment would not be impacted. Any utilities adjustments would be carried out within the construction footprint only, as shown with greater clarity in Figure 3-2.

Issue description

No ancillary construction related facilities, utilities or access are to be provided on park.

Response

The location of ancillary facilities is shown in Figures 3-3 a to d of the REF. No ancillary facilities are proposed to be located on NPWS land.

Issue description

No access to or works on park are to occur as part of this project unless authorisation is granted by NPWS under the NPW Act or National Parks and Wildlife Regulation 2019. In particular, the park is not to be used to gain access to project works sites or for the storage of materials (including excavated material), equipment, workers' vehicles or machinery at any time.

NPWS would advise that any access to park for investigations would be subject to NPWS authorisations consistent with the Developments adjacent to National Parks and Wildlife Service lands (NPWS 2020) guidelines. This includes access to undertake building condition surveys (see proposed mitigation measure NV09 in Table 7-1 Summary of safeguards and management measures, p. 448) and test excavations and monitoring (see proposed mitigation measure NH15 in Table 7-1 Summary of safeguards and management measures, p. 458).

Any works on park such as investigations would also be subject to NPWS environmental impact assessment processes, including the Guidelines for Preparing a Review of Environmental Factors and the NPWS exempt development procedures.

Response

Transport acknowledges that authorisation would be required from NPWS to gain access to work sites through NPWS land or to carry out investigation works on NPWS land, which would require compliance with NPWS guidelines. Authorisation for investigation works carried out for the proposal to date have been received in accordance with NPWS requirements and guidelines and this process will continue to be followed for any works proposed on NPWS land.

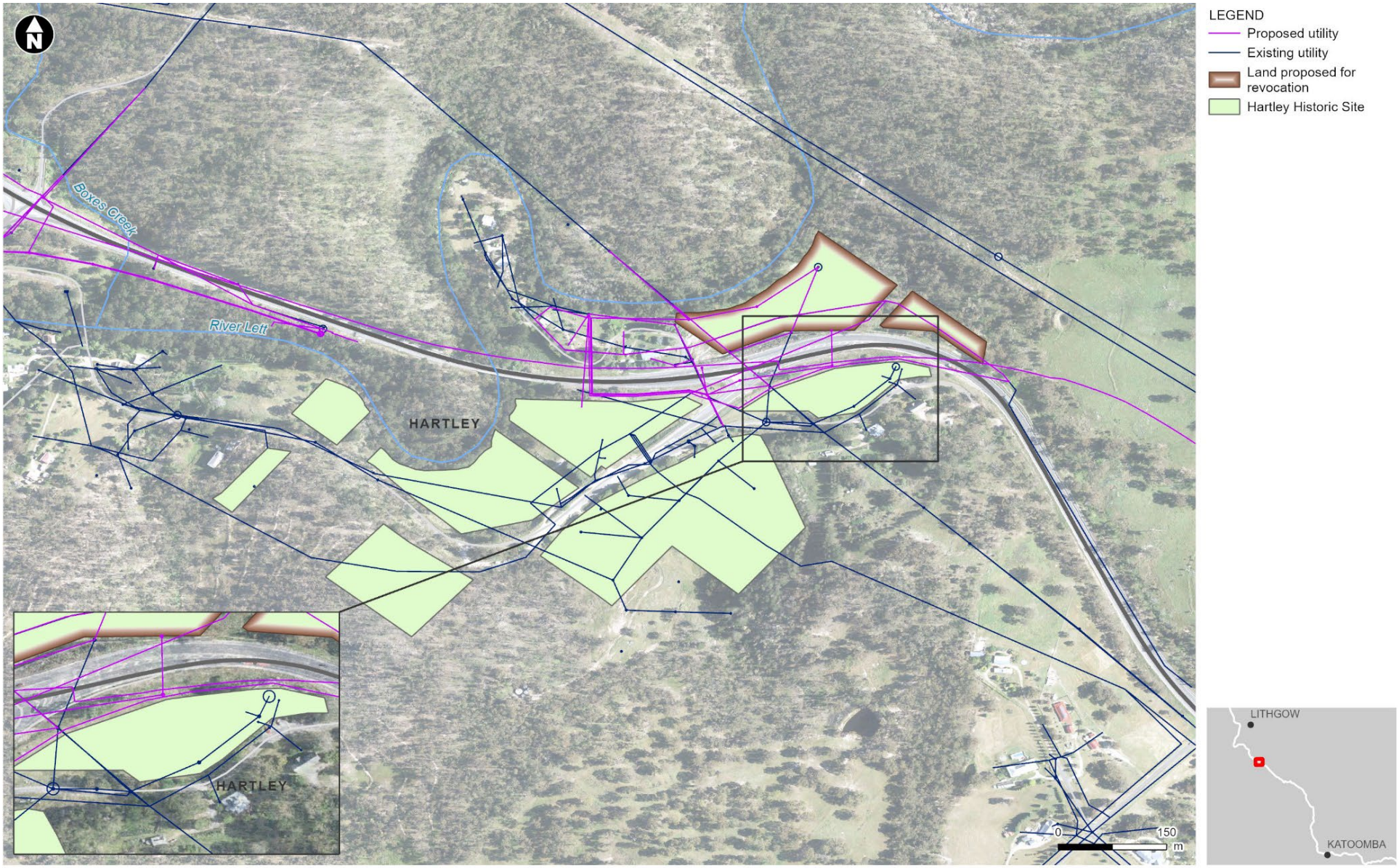

Figure 3-2: Utilities in the vicinity of the Hartley Historic Site

Date: 9/03/2022 Path: C:\Users\eh59186\ARCADIS\Australia GIS - Projects\NSW\GWH\A_Current\B_Maps\Submissions\GWH_Submissions.aprx
Created by : EH
QA by : BG

3.3.4 Biodiversity

Issue description

Apply tree protection on the park interface in accordance with Australian Standard 4970-2009 Protection of Trees on Development Sites, to prevent adverse long-term damage. Particular care is to be taken with significant, old-growth and hollow bearing trees on the park interface.

Response

As stated in Table 5-4 of the REF, tree protection would be applied to trees within the park interface in accordance with Australian Standard 4970-2009 *Protection of Trees on Development Sites*. This will be detailed in the Flora and Fauna Management Plan, which includes plans showing areas to be protected (Safeguard BI01 in Section 6.2 of this submissions report).

Issue description

Employ controlled directional, soft and sectional felling techniques on the interface of the park under the direction of a qualified arborist to avoid direct impacts to park, reducing the risk of any tree (or partial tree) being felled into park

Response

Safeguard BI05 in Section 6.2 of this submissions report commits to removing vegetation 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). This guide includes direction to carefully clear vegetation to avoid impacts to surrounding native vegetation.

Issue description

Ensure hygiene protocols are established and implemented for machinery, vehicles, equipment and materials to limit the introduction of foreign soil, plant matter or pathogens.

Response

It is acknowledged in Section 6.1.3 of the REF that an increase in the movement of people, vehicles, machinery, vegetation waste and soil during and following construction of the proposal may facilitate the introduction or spread of exotic weeds that currently occur within the construction footprint. A Flora and Fauna Management Plan will be prepared in accordance with Transport's Biodiversity Guidelines: Protecting and Managing Biodiversity on Projects (RMS, 2011) and implemented as part of the CEMP, in accordance with Safeguard BI01 in Section 6.2 of this submissions report. It will include protocols to manage weeds and pathogens. Weed species will be managed in accordance with Guide 6: Weed management of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (refer to Safeguard BI25 in Section 6.2 of this submissions report).

Issue description

As a general comment, NPWS is aware of numerous platypus sightings in the River Lett, so TfNSW might consider the need for mitigation measures to protect platypus habitat given recent sightings proximate the proposed works footprint.

Response

Transport has carried out an additional assessment of the potential impacts of the proposal on Platypus (*Ornithorhynchus anatinus*) due to a number of recent sightings of the species recorded by community members within the proposal area near River Lett (Refer to Section 5.1 and Appendix B of this submissions report).

The assessment concluded that Platypus have the potential to be indirectly impacted by a reduction in water quality from earthworks in the vicinity of River Lett and potential direct impacts to Platypus burrows. Erosion and sedimentation control measures and spill management measures are outlined in Section 6.2 of this submissions report to manage water turbidity and spills. Additional mitigation measures have been included to further minimise potential water quality impacts (refer to Section 6.2 and Section 5 of Appendix B of this submissions report). Direct impacts to Platypus burrows would be minimised through the alteration of the drainage design in the vicinity of the River Lett and additional mitigation has been included to this affect. Safeguards have been included to require avoidance of earth works for bridge construction in the Platypus breeding season (October to March) establish a no-go zone within the retained habitat along the River Lett to further reduce potential to impact the species (refer to Safeguard BI38 in Section 6.2 and Section 5 of Appendix B of this submissions report).

Other potential impacts to Platypus include indirect impacts from noise and artificial lighting, shading, litter accumulations in River Lett and hydrological alterations to the River Lett. Safeguards previously included in the REF would mitigate many of these impacts.

3.3.5 Traffic and Transport

Issue description

NPWS seeks further information on the impacts of road changes, temporary or permanent, on access and egress to the village during construction, and whether this will impact the amenity of the site and ability for public use. NPWS notes that there are to be no physical impacts on land reserved as NPWS estate.

Response

As outlined in Section 5.4 of the REF and Safeguard GEN02 in Section 6.2 of this submissions report, Transport will ensure that NPWS are notified prior to the commencement of any works that are adjacent to NPWS land. This will include the details of the relevant point of contact for any public enquiries. Access to NPWS lands would be maintained at all times during construction in accordance with the requirements of safeguards TT01, TT06, SE05 and SE06 in Section 6.2 of this submissions report.

Issue description

As discussed in NPWS original submission, maintaining access to park is a priority both during and after construction, and the project is not to block or restrict any road, trail, or track access. The REF (Table 5-4, p. 99) confirms that access to NPWS lands would be maintained during construction and operation of the proposal and this approach is supported.

Access to the historic site is currently signposted with both directional signage and with a formed NPWS sandstone sign. Given the low resolution mapping provided, the exact extent of the activity footprint cannot be accurately determined, however if this formed sandstone sign will be impacted NPWS requests an appropriate response be developed in association with NPWS, such as relocation of the sandstone sign.

Section 3.2.3 (p. 45) provides that a signposting scheme would be developed for the project corridor and would include directional signage and it is identified as a mitigation measure (SE03 in Table 6-108 Safeguards and management measures – socio-economic, p. 352) that signage would be provided to businesses during construction. It is recommended signage also be provided to key sites, such as the historic site, during construction and upon completion of the project.

Response

Transport is committed to maintaining access to NPWS lands during the construction and operation of the proposal.

Should any existing signage be impacted as a result of the proposal, temporary signage would be installed during construction and reinstated and/or replaced at the completion of works. As described in Section 3.2.3 of the REF, signage will include key destinations and places of interest, which includes the Hartley Historic Village. Safeguard SE03 in Section 6.2 of this submissions report has been amended to clarify this point:

> **Safeguard SE03**: Signage would be provided to key business locations, such as Little Hartley, and key destinations and places of interest, such as Hartley Historic Village, during construction. Any signage impacted during construction would be reinstated and/or replaced at the completion of works.

Issue description

More detailed information is required on the impacts on the current access. This should include change in profile of road embankments into the site and visual impacts to and from the village due to any changes in landform. NPWS seeks further information on the impacts of road changes, temporary or permanent, on access and egress to the village during construction, and whether this will impact the amenity of the site and ability for public use.

Response

Transport is committed to maintaining access to NPWS lands during the construction and operation of the proposal.

As per Safeguard TT01 in Section 6.2 of this submissions report, a Traffic Management Plan (TMP) will be prepared for the construction phase. This will include, but is not limited to, site specific traffic control measures to manage and regulate traffic movement. Transport is committed to ongoing consultation with NPWS as outlined in Section 5.6.1 in the REF, which required engagement with affected landowners about the project and key design decisions that may impact them.

During construction consultation will be carried out in accordance with the CCS that will be developed in accordance with Safeguard SE01 in Section 6.2 of this submissions report.

During operation, Hartley Historic Site would be accessed by westbound traffic by exiting the Great Western Highway at Off Ramp 1 and turning left onto Old Bathurst Road. To access the site when travelling eastbound, traffic would exist at Off Ramp 2 at the Jenolan Caves Road intersection, then turn left onto the service road and turn right onto Old Bathurst Road. To re-enter the highway, traffic would turn left out of Old Bathurst Road, travel west along the service road and re-enter at the Jenolan Caves Road intersection.

Issue description

Access to NPWS lands is to be maintained at all times during construction.

Access to NPWS lands is to be maintained during the operation of the proposal.

Response

Transport is committed to maintaining access to NPWS lands during the construction and operation of the proposal.

Issue description

Temporary directional signage to Hartley Historic Site is to be provided during construction.

Response

As described above, SE03 includes provision of signage to key business locations and places of interest, including Hartley Historic Village. As per environmental safeguard TT01, a TMP will be prepared for the construction phase of the proposal. This will include measures to maintain access to properties and local roads, and methods to consult and inform the local community of impacts on the local road network.

3.3.6 Noise and vibration

Issue description

NPWS seeks more information and research to be presented on the likely impacts of vibration on the historic heritage structures to better inform the detail of the management measures set out in Table 7.1.

NPWS supports the general analysis and management measures for Indirect (vibration) set out in Table 7.1 of Appendix H and seeks for these to be included in the conditions of the REF together with any additional measures identified.

In addition to these management measures, NPWS seeks the additional requirement/condition for 'tell tale' crack monitoring devices to be added to the vibration monitoring regime for any cracks on any buildings on the site and be monitored for at least 12 months after the completion of works.

The dilapidation survey should also include an extensive pictorial of built heritage items, such as Shamrock Inn, to monitor potential cracking and movement of buildings during construction works.

Response

Transport acknowledges that the proposal will have potential noise and vibration impacts on heritage buildings during construction (sections 6.3 and 6.5 of the REF). In accordance with Safeguard NH13 in Section 6.2 of this submissions report, a dilapidation survey will be completed for a number of heritage items, including the Hartley Historic Site, to assess, on a case-by-case basis, whether the fabric would be sensitive to vibration impacts during construction or operation. Safeguard NH13 has been updated to confirm dilapidation surveys will be completed prior to commencement of construction as follows:

> **Safeguard NH13**: A dilapidation report ~~should~~ **will** be prepared prior to construction for each of the following sensitive heritage item to assess, on a case-by-case basis, whether the fabric would be sensitive to vibration impacts during construction or operation:
>
> - Rosedale (LEP I024)
> - Nioka (LEP I025)
> - Harp of Erin (LEP I028)
> - House (LEP I021)
> - Meads Farm (LEP I020)
> - Hartley Historic Village (SHR 00992/LEP I043)
> - Bridge over the River Lett (unlisted)
> - Fernhill (SHR 00225/LEP I043)
> - Emoh (Emu Store/Corderoy's Store) (LEP I051)
> - Road culvert and retaining wall at Emoh (LEP A027)
> - Umera (Bowenfels Inn, Tricks House) (LEP I052)
> - Ben Avon (former Royal Hotel) (LEP I053)
> - Old Catholic Cemetery (LEP A029)
> - Somerset House (LEP I057)
> - Parsonage Farm (LEP I058)
> - Presbyterian Church and Sessions Hall (LEP I059)
> - Bowenfels Presbyterian Cemetery (LEP A030)
> - Caldwells House (LEP I061)
>
> Vibration monitoring ~~would~~ will be carried out on sensitive heritage items for at least the period of construction. Monitoring ~~should~~ would continue at least 12 months after the completion of works to determine if ongoing impacts are occurring i.e. identify any operational damage attributable to the proposal.
>
> Surfacing and construction methods in proximity to sensitive heritage items ~~should~~will be in accordance with the Transport criteria for construction adjacent to sensitive heritage buildings.

The dilapidation report for each cemetery ~~should~~will involve archival recording/photographs showing the present state of monuments, followed by an assessment of any tilting of headstones or cracking of slabs that may be attributable to roadworks.

In addition to the above, Safeguard NH14 in Section 6.2 of this submissions report includes provision of more stringent management measures should heritage items be deemed sensitive to vibration impacts. The safeguard has also been slightly amended to confirm this will be implemented, as follows:

> **Safeguard NH14**: Where a heritage item is deemed sensitive to vibration impacts, the more stringent German Standard guideline values (DIN 4150) ~~should~~will be followed when assessing minimum safe distances and determining allowable plant and its maximum vibration level.
>
> This may require a greater safety buffer to be maintained between the heritage item a particular vibration-intensive construction equipment.

Issue description

Given the limited level of detail provided on impacts on a building-by-building basis it is difficult to determine how Section 4.2.4 (p. 81) assesses the impacts of the proposal to be moderate to the site (particularly given an area of the historic site is proposed for revocation). Other potential impacts to NPWS managed heritage buildings also appear not to be fully assessed in the REF, for example vibration impacts on heritage buildings resulting from the project (Executive Summary, p. viii) and blasting undertaken within 340 metres (or closer) of various heritage buildings (Executive Summary, p. vii) despite the potential for flyrock to impact up to 500 metres from each blast site (Section 3.3.5, pp. 61-62). This presents significant safety concerns for visitors and personnel on NPWS managed lands, as well as to the fabric of the heritage buildings in proximity to the blasting.

Response

Detailed impact assessments on heritage buildings located within the construction footprint can be accessed at Section 6 in Appendix H of the REF. Appendix F of the REF assesses the noise and vibration impacts on heritage items. As per Safeguard NH13 in Section 6.2 of this submissions report, Transport is committed to prepare a dilapidation report for heritage items on a case-by-case basis before construction activities and provide vibration monitoring for sensitive heritage items at least 12 months after the completion of works. Safeguard NH12 notes dilapidation surveys will also be conducted for structures not expected to be sensitive to vibration impacts to confirm their sensitivity to construction vibration. Transport is committed to consultation activities with NPWS and is open to share the relevant reports for NPWS comment.

Landscape character and visual impacts are addressed in Section 6.9 and Appendix L of the REF. Section 6.9.2 of the REF and Section 2 of Appendix L provides a contextual analysis of the study area and acknowledges the scenic nature of the landscape which includes rural-residential and native woodland landscape characteristics. The urban design principles set out in Section 4 of Appendix L includes the development of a design that fits with the existing high visual qualities, ecology and character of the Hartley Valley and its setting (Objective 1). It also includes the objective (Objective 2) to minimise impacts to the integrity of heritage sites, significant trees and cultural values of the community within the proposal.

As required by Safeguard LV01 in Section 6.2 of this submissions report, an Urban Design Plan will be prepared to facilitate an integrated urban design and engineering design outcome for the proposal and will detail the application of the design principles as identified in the REF. The detailed design of the proposal will consider opportunities to reduce the construction footprint, explore the

maximisation of vegetation and planting opportunities along the upgraded highway, and ensure residual land is developed to complement the existing landform (Safeguard LV02). As per environmental safeguard LV03 in Section 6.2 of this submissions report, landscaping planting and maintenance will be in accordance with the Lithgow City Council Weed List and include indigenous species endemic to the area.

Issue description

More information and research is required on the likely impacts of vibration on the historic heritage structures to better inform the detail of the management measures set out in Appendix H.

Response

As outlined in Section 6.2 of this submissions report, several safeguards would be put in place to minimise potential vibration impacts on heritage items. Safeguards NH12 and NH13 have bene updated to state that further dilapidation surveys will be completed for sensitive heritage items. Safeguard NH13 commits to vibration monitoring for sensitive heritage items for the period of construction and will continue at least 12 months after the completion of works to determine if ongoing impacts are occurring due to operation of the proposal.

Issue description

The safety of park visitors and public entry roads into park must be considered where these roads intersect with the Great Western Highway road corridor and project works are proposed.

As discussed above, the REF identifies that flyrock has the potential to impact up to 500 metres from blast sites, and that blasting within 340 metres (or closer) of Hartley Historic Site, posing potential risk to NPWS personnel and visitors to the historic site.

Response

The safety of park visitors is of the upmost priority and Transport is willing to consult with NPWS over the timing of blasts. The construction contractor would be responsible for controlling flyrock and assessing and minimising the potential impact of blasting on all adjacent land uses.

Issue description

A blast management plan and flyrock management plan are to be developed for the project. No blasting is to occur at a proximity of NPWS estate that would place any NPWS lands at risk of impact by flyrock.

Ensure risks to park visitors are considered and identified risks are addressed appropriately. Traffic management solutions should be sought and implemented to mitigate any identified risks.

Response

A Blast Management plan will be prepared as per safeguard NV10, and a Flyrock Management Plan will be prepared in consultation with technical specialists as per safeguard NV11. Management measures to be considered include implementing a minimum clearance distance of 500 metres from the blasting location to non-construction personnel. Ongoing consultation with NPWS and the local community will be carried out in accordance with the CCS (Safeguard SE01 in Section 6.2 of this submissions report) to ensure potential blasting risks to park visitors are addressed appropriately.

3.3.7 Aboriginal heritage

Issue description

Establish whether Native Title is extinguished for each of the lots on which it is proposed prior to REF determination.

Response

As discussed in Section 4.3.2 of the REF, the proposal falls within the boundaries of one Native Title claim (Warrabinga-Wiradjuri #7, NC2018/002) and one Indigenous Land Use Agreement (ILUA) (Gundungurra Area Agreement, NI2014/001).

The Native Title claim is applicable on lands within the construction footprint to the west of the River Lett. This is a pending Native Title claim and it has not determined by the Federal Court whether Native Title exists under the *Native Title Act 1994*.

The ILUA is applicable on lands within the construction footprint to the east of the River Lett. Under this ILUA, all parties agree the construction or establishment of Public Works (which, by definition under Section 253 of the *Native Title Act 1993*, includes roads) can be lawfully carried out on land subject to the ILUA.

Transport will continue to consult with the Native Title Tribunal and local Aboriginal communities throughout the development of the proposal.

3.3.8 Non-Aboriginal heritage

Issue description

As described in the Hartley Historic Site Conservation Management Plan (2002) the majority of the historic heritage values of the site are located on the lots south of the current highway alignment, including the majority of buildings as well as a moveable items collection. There appears to be limited assessment in the REF of the historic heritage and other values of the lands to be revoked, which are within the curtilage of the State Heritage Registered site, in the context of the remainder of the historic heritage site.

Response

Potential impacts to non-Aboriginal heritage were outlined in Section 6.5 and detailed in Appendix H of the REF. As noted above, and shown in Figure 3-1, the construction footprint would not extend into the SHR curtilage to the south of the current highway alignment. No works would occur on the land proposed for revocation until the revocation process is complete.

Table 6-73 in the REF contains details of the potential impacts to Hartley Historic Village, including the truncating of the heritage curtilage to the north of the existing highway and a minor truncation of the LEP heritage curtilage behind the Royal Hotel. Further detail is provided in Section 6.5.1.2 of Appendix H of the REF which states: '... proposal impacts are restricted to the north of the current highway outside of the village's central precinct and away from its built heritage fabric, it is not considered to significantly degrade the conservation objectives of the reserved site'.

In accordance with NH16 in Section 6.2 of this submissions report works within the SHR curtilage, such as excavations would require approval under s60 of the Heritage Act.

Issue description

Through internal inconsistencies in the REF NPWS holds concerns of potential impacts to park. For instance, Table 7-3 Summary of heritage approvals required (p. 477) identifies that for Hartley Historic Site (SHR 00992/LEP I043) "works within the SHR curtilage will require approval from the Heritage Council prior to construction under Section 60 or subsection 57(2) of the Heritage Act". The REF fails to clearly identify which sections of the Hartley Historic Site "curtilage" these impacts would occur in and fails to identify that if these works are within NPWS estate, NPWS authorisation would also be required.

Response

As noted above, and shown in Figure 3-1, the construction footprint would not extend into the SHR curtilage to the south of the current highway alignment. Only land to the north of the current highway alignment (ie the land proposed for revocation) would be subject to revocation and impacts. However, works would not occur until the revocation process is complete.

Once the revocation has been passed, the land will become Crown land and the ownership of the land would be transferred to Transport once compensatory measures have been agreed upon and delivered. The land remains within the SHR curtilage and appropriate approvals under the Heritage Act are still required, until the curtilage under the SHR is amended.

Issue description

Table 6-73 Potential impacts on heritage items – River Lett to Forty Bends (p. 251) provides that "the proposed works would directly impact and bury a portion of [Hartley Historic Site's] heritage curtilage". It is unclear whether this refers to the lands proposed for revocation, or to the historic site south of the existing alignment that would remain reserved.

Response

As described above, while the land would be revoked from being NPWS land, it remains within the SHR curtilage and has therefore been described as such. As shown in Figure 3-1, the construction footprint would not extend into the SHR curtilage to the south of the current highway alignment.

Issue description

Similarly, Appendix H, Table 7.1: Summary of recommended management and mitigation measures, refers to direct physical impacts within the curtilage of the State Heritage listed site and identifies measures for management such as archival recording; test excavations and monitoring ground disturbance without showing detailed maps of where these activities will occur.

Response

As described in Section 3.4.3.3 of Appendix H of the REF, the Hartley Historic Site Conservation Management Plan identifies areas of archaeological potential within the Hartley Historic Site, including the areas adjacent to the Royal Hotel and the courthouse. These areas are discussed further in Section 6.5.1.2 of Appendix H of the REF. Safeguard NH15 in Section 6.2 of this submissions report requires test excavations prior to ground disturbance works within the Hartley Historic Village (SHR 00992/LEP I043) which will be carried out by appropriately qualified archaeologist and would focus on the areas identified in the Conservation Management Plan. Any proposed monitoring, recording or further investigative works that are detailed in the safeguards and management measures in Section

6.2 of this submissions report would be further developed as the proposal progresses. Transport is committed to ongoing consultation with NPWS and would ensure any NPWS processes are followed when carrying out works.

Issue description

Table 5-4 Issues raised through ISEPP consultation (p. 96) identifies mitigation measure PR04 in Section 6.11 that "ensures that all personnel will be made aware that they are not permitted to enter NPWS land and that demarcation between the construction site and park is established." While this approach is supported, mitigation measure PR04 is not included in Section 6.11 of the REF.

Response

It is acknowledged Safeguard PR04 was omitted from the REF. As described in Table 3-9, the pre-construction and early works phase of the proposal would include demarcation of construction footprint with construction fencing and temporary safety barriers where required. No works would be permitted outside of this marked construction footprint. Additionally, Safeguard BI24 notes exclusion zones will be set up at the limit of clearing, which will include demarcation of NPWS land. This would be made clear during the training provided to all site personnel described in Safeguard GEN03.The mitigation measures included in Section 7 of the REF and as updated in Section 6.2 of this submissions report would form part of the approval of the proposal.

Issue description

In Table 7-1 Summary of safeguards and management measures (p. 437) mitigation measure GEN03 identifies that the toolbox briefings would include briefings on higher risk areas including areas of Aboriginal heritage sensitivity, threatened species habitat and adjoining residential areas however fails to identify the historic site as a higher risk area.

Response

Safeguard GEN03 has been revised as follows to include non-Aboriginal heritage sites as higher risk areas:

> **Safeguard GEN03**: All personnel working on site will receive training to ensure awareness of environment protection requirements to be implemented during the proposal. This will include up-front site induction and regular "toolbox" style briefings. Site-specific training will be provided to personnel engaged in activities or areas of higher risk. These include:
>
> - Areas of Aboriginal and non-Aboriginal heritage sensitivity
> - Threatened species habitat
> - Adjoining residential areas requiring particular noise management measures.

Issue description

NPWS would advise that any access to park for investigations would be subject to NPWS authorisations consistent with the Developments adjacent to National Parks and Wildlife Service lands (NPWS 2020) guidelines. This includes access to undertake building condition surveys (see proposed mitigation measure NV09 in Table 7-1 Summary of safeguards and management measures, p. 448) and test excavations and monitoring (see proposed mitigation measure NH15 in Table 7-1 Summary of safeguards and management measures, p. 458).

Response

Transport queries whether building condition surveys, monitoring, and test excavations are considered developments and subjected to *Developments adjacent to National Parks and Wildlife Service lands* (NPWS 2020) guidelines (as not subject to a development application). Procedures to gain access to NPWS land for testing and monitoring will continue to be in accordance with internal NPWS procedures until NPWS land is revoked.

Issue description

It is recommended that an archaeological assessment should include the area adjoining Bathurst Road at the deviation in the road where the land falls downslope to River Lett and bridge – with an approximate distance of 200 metres. This area of archaeological significance is identified in the Conservation Management Plan (2002) but has not been acknowledged or assessed in the REF, particularly given there is potential impact to the landform and stratigraphy from blasting.

Response

The Hartley Historic Site Conservation Management Plan is considered in Section 3.4.3.3 of Appendix H of the REF. Two areas of archaeological potential listed in the conservation plan were identified as being relevant to the proposal and required further archaeological assessment be completed for each area prior to construction, as included in Safeguard NH16. The items listed were:

- Adjacent to the courthouse – related to the cellblock and courthouse grounds
- Adjacent to the Royal Hotel – in the garden and grounds and in Section 14 (north).

Other areas of archaeological potential would not be impacted by the proposal. A blast management plan would be implemented to manage the potential impacts associated with blasting in the vicinity of the Hartley Historic Site (Safeguard NV10). It is, however, expected that any potential impacts would more likely affect structures rather than landforms. These would be monitored in accordance with Safeguards NV01, NV02, NV05 and the Blasting Management Plan.

Issue description

As discussed throughout this response, there are to be no direct impacts on land held within NPWS estate. This assessment suggests that there will be impacts. The statement of heritage impact (Section 6.5.1.2., p. 98) also appears to indicate impacts are anticipated.

Appropriate mitigation measures or redesign of the proposal is required to ensure no impacts to NPWS estate.

Response

Section 6.5 and Appendix H of the REF summarises the proposal's impacts on non-Aboriginal heritage. Transport acknowledges that the proposal will have moderate direct and indirect impacts (see Tables 6-72 of the REF) on heritage items within Hartley Historic Village due to vibration and construction activities. Mitigation will include dilapidation surveys for all heritage structures within, or in close proximity to, the construction footprint in order to establish their level of sensitivity to vibration impacts and those structures deemed to be sensitive will require vibration monitoring during construction (Safeguards NH12 and NH13). As per safeguard NH14, where a heritage item is deemed sensitive to vibration impacts, the more stringent German Standard guideline values (DIN 4150) should be followed when assessing minimum safe distances and determining allowable plant and its maximum vibration level. This may require a greater safety buffer to be maintained between the heritage item and a particular vibration-intensive construction equipment.

As per environmental safeguard LV01 in Section 6.9.4 of the REF, an Urban Design Plan will be prepared to facilitate an integrated urban design and engineering design outcome for the proposal and will detail the application of the design objectives identified in Section 2.3.3 of the REF. This includes design objective 2, which is to minimise impacts to the integrity of heritage sites, significant trees and cultural values of the community within the proposal.

Issue description

As discussed in NPWS original submission, the proposed alignment runs adjacent to the former Royal Hotel. The Royal Hotel is currently used by NPWS to manage Hartley and Kanangra field-based operations. Where potential impacts are identified, it is noted that mitigation measures such as noise barriers might be required. NPWS recommends TfNSW continue to liaise with the Service as the project progresses to ensure any mitigation measures implemented would be compatible with the historic heritage values of the site.

Response

Section 6.6.1.5.1 in Appendix H of the REF provides a Statement of Heritage Impact which acknowledges the potential impacts of the proposal on Ben Avon (formerly the Royal Hotel). To manage the risk of potential vibration impacts to this heritage item, a dilapidation survey will be completed to assess the vibration risks specific to the heritage and what management and mitigation measures are required (Safeguard NH13 in Section 6.2 of this submissions report). As per Safeguard NH10, Transport will, where possible, blend new batter slopes and embankments with existing topography near Ben Avon prior to construction and during construction. Based on the noise and vibration assessment, noise walls are unlikely to be suitable for mitigation due to the distance between properties. However, operational noise impacts within the construction footprint will still be minimised through other means including adjustments to road design features (Safeguard NV12).

Section 6.9.4 of the REF summarises the safeguards and management measures in place to address the proposal's visual impacts. As per environmental safeguard LV01, an Urban Design Plan will present an integrated urban design for the proposal and will include design treatments for built elements.

Issue description

The lack of detailed assessment undertaken in the REF also means that impacts of the proposal on potential future adaptive reuse of structures by NPWS cannot adequately be determined. NPWS holds concerns this might impact future management actions able to be carried out in Hartley Historic Site.

Response

In accordance with the ISEPP, Transport is committed to ongoing consultation with NPWS regarding the proposal and to providing the relevant information required for NPWS comment. As required by Safeguard PL03, property adjustments for the proposal will be completed in consultation with property owners.

Issue description

Concerningly, Figure 6-9 (Construction vibration assessment – Little Hartley to River Lett and Coxs River Road, p. 210) appears to show both road infrastructure and the cosmetic damage zone encroaching into the area of Hartley Historic Site south of the current highway alignment. Impacts to the historic site should be firstly avoided and, if not possible to avoid, mitigated. The REF does not demonstrate that this process has been followed given the cosmetic damage zone appears to encroach NPWS estate.

Response

All proposed works would occur within the proposal construction footprint and would not directly impact the area of Hartley Historic Site south of the current highway alignment, as shown in Figure 3-1. As discussed in Section 6.3.3 of the REF, potential impacts during vibration intensive work have been assessed using the CVNG minimum working distances for cosmetic damage and human response. There are some areas of the Hartley Historic Site that are within the minimum working distances for cosmetic damage and mitigation will be required to be considered. Figure 3-3 provides more detail of the predicted vibration impacts on the Hartley Historic Site. Construction equipment that may cause vibration impacts would not occur on the boarder of the construction footprint, therefore serious impacts aren't expected.

As detailed in Safeguard NV07 in Section 6.2 of this submissions report, where work is within the minimum working distances and considered likely to exceed the cosmetic damage criteria:

- Different construction methods with lower source vibration levels will be investigated and implemented, where feasible
- Attended vibration measurements will be carried out at the start of the work to determine actual vibration levels at the item. Work should be ceased if the monitoring indicates vibration levels are likely to, or do, exceed the relevant criteria.

As detailed in Safeguard NV09, building condition surveys will be completed before and after construction where buildings or structures are within the minimum working distances and considered likely to exceed the cosmetic damage criteria during the use of vibration intensive equipment and/or blasting activities. As detailed in Safeguard NH13, a dilapidation report will be prepared for the Hartley Historic Site to assess whether the fabric would be sensitive to vibration impacts. Vibration monitoring will be carried out during construction and for at least 12 months after the completion of works to determine if ongoing impacts are occurring. Surfacing and construction methods in proximity to sensitive heritage items will be in accordance with the Transport criteria for construction adjacent to sensitive heritage buildings.

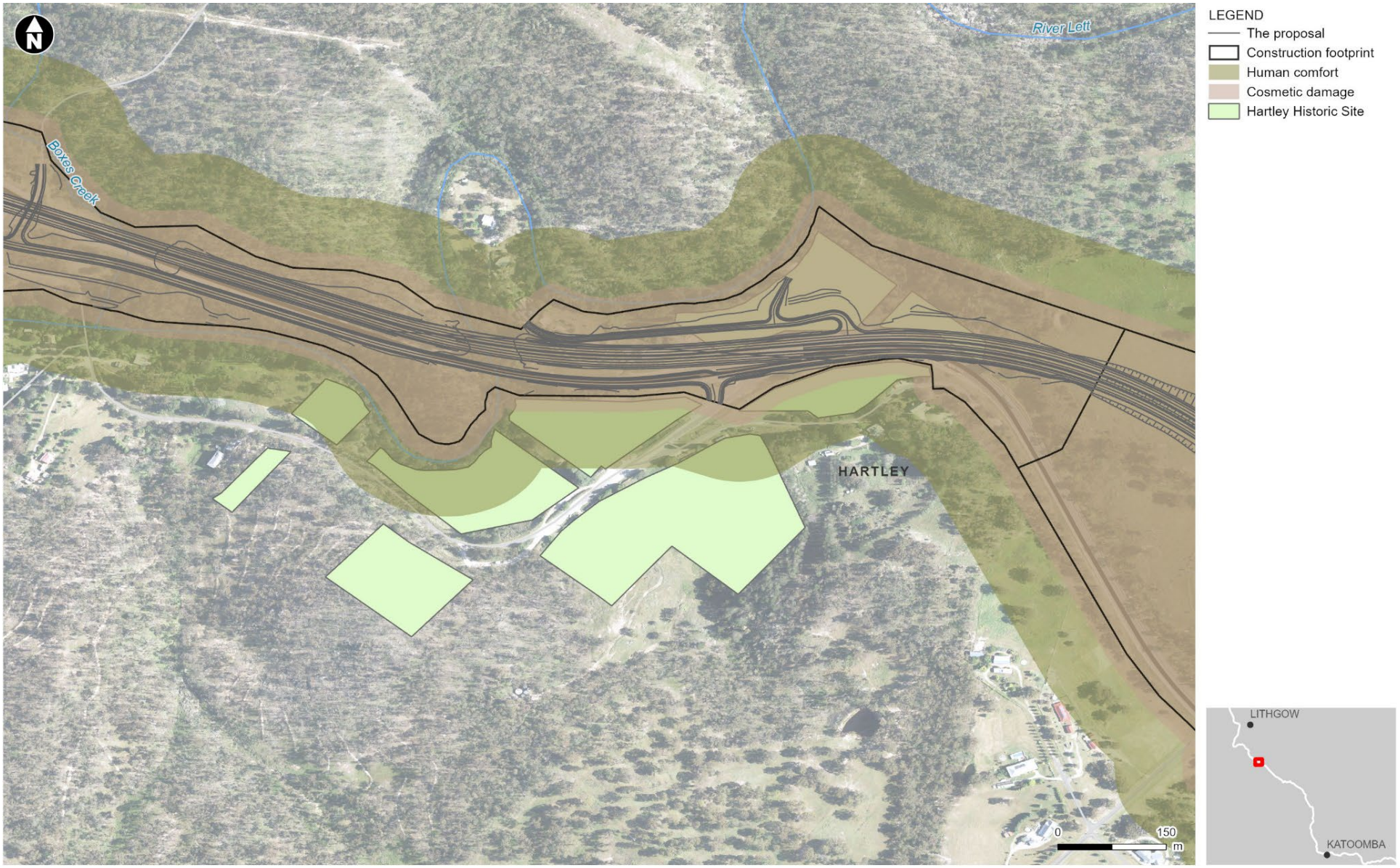

Figure 3-3 Vibration impacts at the Hartley Historic Site

Date: 8/03/2022 Path: C:\Users\eh59188\ARCADIS\Australia GIS - Projects\NSW\GWH\A_Current\B_Maps\Submissions\GWH_Submissions.aprx
Created by : EH
QA by : BG

Issue description

It is also noted that the Royal Hotel is listed as being on the Register of National Estate (RNE) in the REF (Table 6-67,p p. 244) however the RNE was closed in 2007 and is an archive/reference list now. The Royal Hotel is listed on the NSW State Heritage Register and HHIMS/NPWS-OEH Section 170 Register.

Response

Transport acknowledges these updated listings. A clarification on this error is included in Section 4.2 in this submissions report. This clarification does not alter the impact assessment carried out for the REF.

Issue description

A sectional detail of the site and roadway is required to understand distances and setbacks, heights, and widths, specific to the Former Royal Hotel – being the most affected building within the historic site.

Response

A sectional detail of the proposal specific to the Royal Hotel would be developed during detailed design and will be provided to NPWS for information, on request.

Issue description

Where impacts to historic heritage values of the park are assessed, appropriate mitigation measures are to be considered and implemented. Any necessary mitigation measures are to be located off park, unless otherwise identified, agreed upon and authorised by NPWS.

Response

The heritage impacts of the proposal would be mitigated through safeguards and management measures as outlined in Section 6.2 of this submissions report. Transport is committed to ongoing consultation with NPWS to any works related to NPWS land.

Issue description

Amend mapping to clearly exclude NPWS lands from any construction footprint, subject land and any other associated works.

Response

As shown in Figure 3-1, other than the land proposed for revocation, no other area of the Hartley Historic Site is within the construction footprint.

Issue description

The revocation of part of Hartley Historic Site (under this proposal) and part of Blue Mountains National Park (as part of another of the highway upgrade proposals) is not considered as a cumulative social impact in Table 6-138 Potential cumulative impacts (pp. 432-433) and as discussed above the requirement to revoke part of Hartley Historic Site as a result of the proposal is not consistently assessed throughout the REF as an impact of the proposal, nor are the likely impacts to the lands that will remain reserved as Hartley Historic Site that are proximate the highway. This undermines the REF's conclusion that the proposal is not likely to have a significant impact on the environment.

Response

Transport has carried out a Review of Environmental Factors (REF) under the EP&A Act 1979 Division 5.1 and examined and taken into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity.

The statutory planning pathway for the Great Western Highway Upgrade Program – Little Hartley to Lithgow (West Section) was established in accordance with the EP&A Act and the Infrastructure SEPP (ISEPP) 2007. Clause 94 of ISEPP permits development on any land for the purpose of a road or road infrastructure facilities to be carried out by or on behalf of a public authority without consent. As the Proposal is for a road upgrade and duplication and is to be carried out by Transport, it can be assessed under Division 5.1 of the EP&A Act.

Additionally, the proposal is not likely to have an impact on matters of national environmental significance or the environment of Commonwealth land within the meaning of the EPBC Act. A referral to the Australian Government Department of Agriculture, Water and Environment was not required.

The proposal is only one part of the overall Great Western Highway Upgrade Program of works. Further upgrades have been proposed based upon available funding, project location, construction type and staging. Further upgrades including both the Katoomba to Blackheath (East), Blackheath to Little Hartley (Central) and Medlow Bath projects will also be subject to assessment in accordance with the EP&A Act, with the appropriate statutory planning pathway selected as per each project's potential significance of impacts.

Although it is not a requirement for a Division 5.1 proposal, the newly released cumulative impact assessment guideline for SSI (DPIE) has been used as a guide. Transport will carry out cumulative impacts assessments as each project within the program progresses. Potential socio-economic impacts of the proposal were assessed in Section 6.10 of the REF. Additionally, a number of safeguards were outlined to minimise any impacts in Section 6.2 of this submissions report.

3.3.9 Environmental management

Issue description

It is recommended that the applicant should consider development of the following plans prior to construction, to minimise potential impacts of construction on adjacent land including NPWS estate:

- construction environmental management plan
- community and stakeholder involvement plan
- construction noise and vibration management plan
- blast and flyrock management plan.

Response

The plans requested will form part of the environmental requirements for the proposal that will be incorporated into the detailed design phase of the proposal and implemented during construction and form part of the environmental safeguards for the proposal. The preparation and delivery of the plans are captured in the summary of safeguards in Section 6.2 of this submissions report, which form part of the proposal commitments, as follows:

- A Construction Environmental Management Plan will be prepared, as described in Safeguard GEN01
- A Community Communication Strategy will be prepared, as described in Safeguard SE01
- A Construction Noise and Vibration Management Plan will be prepared, as described in Safeguard NV01
- A Blasting and Flyrock Management Plan will be prepared. as described in Safeguards NV10 and NV11.

Issue description

Ensure all operational documentation contains clear procedures for incident management should issues arise on the interface or directly affecting park. Procedures should include emergency reporting via the Environment Line on 131 555 and in writing to the Manager, NPWS Kanangra Area.

Response

Clear communication requirements and procedures for emergency and incident management, including NPWS contact details, will be included in the CEMP, as stated in Safeguard GEN01.

3.3.10 Soils and surface water

Issue description

Ensure application of adequate sediment and erosion control is utilised to limit the movement of sediment across the park interface in accordance with recognised standards such as the ‘Blue Book’.

Response

As identified in Safeguard SW01 in Section 6.2 of this submissions report, a Construction Soil and Water Management Plan (CSWMP) will be developed and will include an Erosion and Sediment

Control Plan (ESCP). The ESCP will contain measures to mitigate erosion and sediment transport both within the construction footprint and offsite including requirements for the preparation of erosion and sediment control plans for all progressive stages of construction and the implementation of erosion and sediment control measures including the use of sediment basins. These erosion and sediment control measures will be implemented in accordance with The Blue Book (Landcom 2004) prior to the commencement of construction activities and will be maintained throughout construction.

Issue description

Stormwater management systems are designed and function to limit adverse impacts to surface water flow and water quality associated with the upgrades during construction and operation.

Response

As described in Table 3-8 of Section 3.2.3 of the REF, construction phase sediment basins and permanent dry biofiltration basins and a wet basin are proposed to ensure runoff meets the relevant water quality criteria. Safeguard SW03 in Section 6.2 of this submissions report commits to further NorBE assessment to confirm that the proposal would achieve the NorBE requirements of the Sydney Drinking Water Catchment SEPP.

As identified in Safeguard SW06, a surface water quality monitoring program will be developed to monitor surface water prior to construction, during construction and during operation.

Issue description

Assessment and possible installation of gross pollutant traps to limit rubbish movement into watercourses and park is also requested to ensure long term environmental protection.

Response

The need for gross pollutant traps would be further considered during detailed design of the proposal.

3.3.11 Landscape character and visual amenity

Issue description

More detailed information is required on the impacts on the current access. This should include change in profile of road embankments into the site and visual impacts to and from the village due to any changes in landform.

It is important to understand the nature and scale of the proposal and the new heights of the highway compared with existing heights.

Response

As noted in Section 2.4.3 in Appendix L of the REF, the proposed upgrade would impact access to the entry road and the adjoining local road network of Hartley Historic Village. It is expected that when interruptions do occur, they will only be for short periods and only in agreement with NPWS. Transport are committed to ongoing consultation with NPWS regarding the proposal and to providing relevant information required for NPWS comment. Access to NPWS lands would be maintained at all times

during construction in accordance with the requirements of safeguards TT01, TT06, SE05 and SE06 in Section 6.2 of this submissions report.

Once operational, the new highway alignment will allow access to Hartley Historic Village through a left turn access road for westbound traffic on Off Ramp 1. This would become a two-way undivided road crossing River Lett on the upgraded existing bridge BR33.

Transport recognises that another key impact of the proposed upgrade includes the steeply undulating landform that would require extensive cut and fill and will include retaining structures where required and the visual impacts of these embankments and retaining structures. Section 6 in Appendix L of the REF shows the affected views of Hartley Historic Village due to the proposal. Section 7.4 of Appendix L summarises the recommendations to be considered to minimise the visual impacts of cuttings and embankments. This includes the substitution of fill embankments with retaining walls would reduce the footprint of the new works, and therefore the degree of vegetation loss. The finish of any concrete panel retaining walls will have dark aggregate to integrate them better into the existing landform. As per Safeguard LV02, detailed design will also consider the use of vegetation in both the road reserve and in the intervening areas to screen the new alignment.

Transport is committed to ongoing consultation with NPWS regarding the proposal and to providing the relevant information required for NPWS comment. Further considerations will be made to minimising the visual impacts on the proposal during detailed design.

Issue description

More details are required on how this visual impact will be mitigated through the use of more sympathetic materials such as brick cladding and also to include screening trees as identified in the Statement of Heritage Impact (Section 6.5.1.2.1, p. 98 of Appendix H).

Response

Section 6.9.3 of the REF acknowledges that the proposal will have high-moderate visual impacts on the Jenolan Caves Road interchange. To minimise visual impacts of the proposed twin bridges over Jenolan Caves Road, the Urban Design Plan will present design treatments to better integrate built elements into the surrounding landscape in accordance with the Bridge Aesthetics guidelines (Transport for NSW, 2019) (Safeguard LV01 in Section 6.2 of this submissions report). This includes having a simple and streamlined design for the proposed bridges to allow the surrounding landscape character to predominate (refer to 7.2 in Appendix L of the REF). Further considerations of the twin bridges to be made during detailed design include the provision of stone pitching to the spill through abutments (Safeguard LV02) (refer to further detail in Section 7.2.3 in Appendix L of the REF). The detailed design will also consider maximising vegetation and planting opportunities along the upgraded highway, particularly in both the road reserve and in the intervening areas to help screen the new alignment for the surrounding rural properties (Safeguard LV02).

Safeguard AH04 in Section 6.2 of this submissions report has been updated and commits to the investigation of opportunities to incorporate Aboriginal and non-Aboriginal cultural heritage interpretation elements into the design of the proposal and in particular bridges, earthworks and plantings will be investigated. The story, scale, form, placement, colour, lighting and materiality of these elements will be explored further during detailed design, when concepts are developed in consultation with locally connected Aboriginal artists and the community. Safeguard AH04 has been updated as follows:

> **Safeguard AH04**: A cultural heritage interpretation strategy will be developed for the proposal and will include both Aboriginal and non-Aboriginal heritage considerations. The cultural

heritage interpretation strategy will form part of the Urban Design Plan and will include consideration of ~~Across the proposal~~, the following interpretation elements ~~have been considered~~ for design integration:

- Public works of art
- Interpretive signage
- Bridges
- Earthworks
- Plantings
- Noise walls.

Issue description

NPWS considers that the proposed upgrade will have a significant impact on the visual setting of the place and collective of late Colonial and early Victorian buildings at Hartley Historic Site, particularly the following on the eastern hillside and those adjoining the Great Western Highway:

- Royal Hotel
- Old Trahlee setting and outlook
- Post Office
- St Bernards Church
- St Bernards Presbytery and Accommodation
- Ivy Cottage
- Farmers Inn (NPWS Office and Kew-Y-Ahn Aboriginal Gallery)
- Shamrock Inn
- Courthouse

Response

Section 6.5 and Appendix G of the REF acknowledge that the proposal will have visual impacts non-Aboriginal heritage. The proposal's potential impacts on the listed heritage items are summarised in Section 6.5.3 of the REF and range from negligible to major, if unmitigated. While there will be visual impacts on the heritage items, these will be minimised through the safeguards and management measures outlined in Section 6.2 of this submissions report. As per environmental safeguard LV02, the detailed design will also consider maximising vegetation and planting opportunities along the upgraded highway, particularly in both the road reserve and in the intervening areas to help screen the new alignment for the surrounding rural properties (refer to Figure 6-43 in the REF). The specification and planting of more mature sized shrubs and trees may be adopted to help reduce the visual impact upon opening of the road since the proposed planting would take several years (between three and 10 years) to establish at adequate height where appropriate long-term landscape outcomes could still be achieved.

Issue description

The REF also concludes that there will be high-moderate landscape character impact in the locality (Table 6-92 Landscape character impacts, p. 319) and it is anticipated that the outlook from the historic site will change as a result of the proposal (e.g. see Table 3-6, p. 41 which provides retaining wall RS21 will include a precast concrete facing panel about 3 metres high and 75 metres long). However, the visual study in the REF does not consider in detail impacts to specific views from key areas of the historic site. NPWS recommends undertaking visualisations showing the view impacts of the proposal from certain points of the historic site as described below, as it is currently not possible to assess the impacts the proposal would have on the site.

Response

The landscape character and visual impact assessment (Section 6.9 and Appendix L of the REF) was carried out in accordance with the 'Environment impact assessment practice note: Guideline for landscape character and visual impact assessment' (EIA-N04) (Transport for NSW, 2020). The assessment utilises select viewpoints from various locations to represent anticipated visual impacts in particular areas. The assessment of visual impacts is then assessed in terms of the sensitivity of the viewpoint and the magnitude of the impact,

- Sensitivity is the measure of visual quality and importance of the view and is dependent on the distance between the observer and the proposal, the activity category of observer and the visible elements of the proposal. Visual sensitivity includes the consideration of the perceived cultural and historical values of the visual environment and the elements within it.
- Magnitude of change on existing views refers to the nature and scale of the proposal, and also the extent and proximity of the view to it. Magnitude represents the contrast in scale, form and type of proposal to the location and context to which it is proposed.

Viewpoint 11, is representative of Hartley Historic Site and the sensitivity of this viewpoint was classified as High, while the magnitude of the impact was also classified as High, leading to an overall rating of visual impact as High. Figure 6-42 of the REF shows the existing environment at this location and a visualisation of the proposal from this viewpoint is provided in Figure 6-43 of the REF. The proposal website includes a fly-over of the concept design which provides further visual context to the proposal (available here: ***https://caportal.com.au/tfnsw/great-western-highway/west/virtual?hview=modalFlythrough1***).

A number of urban design and landscape strategies have been incorporated into the proposal to minimise impacts, including:

- Minimising the removal of existing vegetation and maximising revegetation and planting opportunities with appropriate species,
- Providing tree planting to mitigate the scale of the proposed infrastructure, reinstating the vegetation character of the area, framing views
- Providing amenity along the road corridor and designing new retaining walls to have a finish that relates to the character of the surrounding landscape.

The Urban Design Plan (Safeguard LV01) will be prepared to support the final detailed proposal design, presenting an integrated urban design that applies the design principles and objectives highlighted in the REF.

Issue description

NPWS suggests that a design measure such as potentially colouring the concrete, altering the support forms of the bridge (e.g. arches rather than piers), or providing brick cladding could better integrate the viaduct and retaining walls into the locality and mitigate some potential visual impacts of the proposal when viewed from the heritage site. The provision of vegetative screening as discussed in Appendix H (Section 6.5.1.2.1, p. 98) would also be supported in mitigating potential visual impacts of the proposal when viewed from the historic site.

Response

Section 7.3 in Appendix L of the REF summarises the urban design recommendations for the situations where retaining walls will be required along the proposal. This includes the finish recommended for each wall, such as natural stone, gabion, soldier pile with precast concrete facing panels and concrete blockwork. As noted in Section 7.2 in Appendix L of the REF, the urban design approach to the design of bridges has been to utilise consistent structural element types (such as girders and piers) for the bridges to visually unify the bridges along the Great Western Highway. The Urban Design Plan will include design treatments for built elements, including the bridges. The design will be simple and streamlined to allow the surrounding landscape character to predominate (refer to Section 7.2 in Appendix L of the REF). Also considered are the use of fill embankments, which will be minimised particularly in areas with native vegetation on steep slopes. Opportunities to reduce the bulk of structures will be further considered during detailed design (Safeguard LV02), including suggestions proposed by NPWS. As noted above, opportunities to incorporate cultural heritage interpretation elements into the design of bridges, earthworks and plantings in accordance with Safeguard AH04 in Section 6.2 of this submissions report. The story, scale, form, placement, colour, lighting and materiality of these elements will be explored further during detailed design in consultation with locally connected Aboriginal artists. Transport will also consider maximising vegetation and planting opportunities along the upgraded highway as a screening structure (Safeguard LV02).

3.3.12 Socio-economic

Issue description

Another example of insufficient assessment is the absence of the impacts of the revocation of land currently reserved under the NPW Act to facilitate the project in both Section 8.1.1 (pp. 479-480) in assessing the social factors and impacts of the proposal, and in Section 8.1.4 (p. 481) in assessing whether the proposal is in the public interest. Similarly, Table 6-98 Existing socio-economic environment –River Lett to Forty Bends (pp. 341-342), identifies the Hartley Historic Village Visitor Centre as social infrastructure however fails to identify the historic site itself as social infrastructure (i.e. the values present in and provided by the visitor centre are different to those contained in the historic site itself).

Response

As described in Section 6.10.3 of the REF, the Hartley Historic Village will be impacted through the changing of access routes to the Great Western Highway, increasing the travel time for property owners, business customers and visitors to the village. Construction stage impacts would include noise and vibration, air quality and presence of construction vehicles and diversions. However, social benefits such as improved road safety in the long term and increased local expenditure by construction workers during the construction phase, can be expected within the Village.

The loss of NPWS land will be mitigated through compensatory measures agreed upon by both parties. Transport acknowledges that Table 6-98 should have referenced the Historic Village as a whole, rather than just the visitor centre. A clarification on this error is included in Section 4.2 in this submissions report.

Issue description

Table 6-105 Operational socio-economic impacts –River Lett to Forty Bends (p. 348) states that "Property acquisition for the proposal would not impact on social infrastructure." NPWS disagrees with this assessment, noting that Table 6-105 (p. 349) also fails to identify that the need to revoke an area of Hartley Historic Site to facilitate road infrastructure would have an impact on community values.

Response

Transport acknowledges that Table 6-105 of the REF contains an error. The Hartley Historic Village and St John the Evangelist Anglican Church will be impacted as per Section 4.4.3 of the Social Impact Assessment (Appendix M of the REF) prepared for the proposal. A clarification on this error is included in Section 4.2in this submissions report.

3.3.13 Property and land use

Issue description

NPWS acknowledges that the proposal will involve upgrades and realignment of the Great Western Highway on lands adjacent to Hartley Historic Site and on lands zoned C1 National Parks and Nature Reserves. The proposal also encroaches on land currently reserved under the National Parks and Wildlife Act 1974 (NPW Act) on the northern side of the alignment. These proposed areas of encroachment require revocation from NPWS estate before on-ground works commence.

Response

The need to revoke land reserved under the *National Parks and Wildlife Act 1979* (NPW Act) is discussed in Section 4.2.5 of the REF. A proposal to revoke the section of NPWS land on the northern side of the alignment was submitted to NPWS in September 2021. The submission addresses the requirements of NPWS *Revocation, recategorisation and road adjustment policy* (NPWS, 2017), including an outline of the potential impacts of the revocation. This process is ongoing. Transport will continue to work closely with NPWS throughout the revocation process. Ongoing consultation with stakeholders will be documented in the CCS as detailed in Safeguard SE01 of Section 6.2 this submissions report.

Issue description

NPWS seeks to confirm as part of this response that no works are directly proposed on land reserved or acquired under the NPW Act, other than those lands proposed for revocation.

Response

As shown in Figure 3-1 and discussed below, there are no works directly proposed on land reserved under the NPW Act other than on land proposed for revocation.

Issue description

Overall, NPWS seeks to ensure that all direct or indirect adverse impacts on the park and its values are avoided. NPWS original responses identified that the guidelines for consent and planning authorities, Developments adjacent to National Parks and Wildlife Service lands (NPWS 2020) should be considered in assessing environmental impacts and assigning mitigation measures relevant to the scope of works proposed. Although the REF identifies that these guidelines were considered (Table 5-4 Issues raised through ISEPP consultation, p. 94), this appears to be the only reference to the guidelines and NPWS holds significant concerns over possible encroachments to NPWS estate as discussed in following sections.

Response

Developments adjacent to National Parks and Wildlife Service lands (NPWS 2020) identifies 10 issues to be considered when assessing proposals adjacent to NPWS parks. The REF has considered these issues as identified in Table 3-2.

Table 3-2: Issues raised in *Developments adjacent to National Parks and Wildlife Services lands* (NPWS 2020)

Issue (from NPWS 2020)	Response / where addressed
1. Erosion and Sediment control	Appropriate erosion and sediment control measures are outlined in Section 6.6.4 of the REF. A CSWMP and ESCPs will be prepared in accordance with safeguards SW01and SW02 in Section 6.2 of this submissions report.
2. Stormwater runoff	Appropriate stormwater detention and water quality control measures are outlined in Section 3.1 of the REF and include safeguards SW01 and SW06 in Section 6.2 of this submissions report.
3. Wastewater	Management of wastewater generated from the rest areas will be confirmed during detailed design.
4. Pests, weeds and edge effects	The impact of pests, weeds and edge effects have been assessed in Section 6.1 and Appendix D of the REF. Biodiversity controls are included in Safeguards BI01, BI25 and BI27 in Section 6.2 of this submissions report.
5. Fire and the location of asset protection zones	Asset protection zones are not included in this proposal. Transport will continue to manage grass within the highway corridor to reduce fuel loading and potential for fire ignition. Woody vegetation in the vicinity of the road will be actively managed, and roadside trees inspected for stability and safety following fire events
6. Boundary encroachments and access through NPWS land	Surveys would be carried out as part of the land revocation process as well as during detailed design for the proposal. Access and service roads would not be located on land subject to the NPW Act. As noted above, access through NPWS land is not currently proposed; however, any access through NPWS land would be in accordance with NPWS requirements and guidelines.

Issue (from NPWS 2020)	Response / where addressed
7. Visual, odour, noise, vibration, air quality and amenity impacts	An assessment of amenity impacts for the proposal are detailed in Section 6 of the REF, with safeguards and management measures summarised in Section 6.2 of this submissions report.
8. Threats to ecological connectivity and groundwater-dependent ecosystems	Ecological connectivity and groundwater ecosystems will be maintained through the implementation of Safeguards BI01, BI10, BI13, BI14, BI15, BI20, BI22 and BI23 detailed in Section 6.2 of this submissions report.
9. Cultural heritage	Aboriginal and non-Aboriginal heritage has been assessed in Section 6.4 and 6.5 of the REF. Safeguards and management measures to protect cultural heritage are outlined in Section 6.2 of this submissions report. Aboriginal cultural values interpretation will be incorporated into the design of bridges, interpretative signage, public works of art, earthworks, plantings and noise walls during detailed design in consultation with locally connected Aboriginal artists in accordance with Safeguard AH04.
10. Access to parks	Temporary impacts to road users are expected to occur during the construction phase of the proposal and are addressed in Section 6.2 of the REF. Access to fire trails will be maintained where feasible, and emergency vehicle access will be maintained at all times in accordance with Safeguard SE05 and local communities and road users will be notified about access changes prior to implementation in accordance with Safeguard SE06.

Issue description

It is acknowledged that the proposal partly encroaches on land currently reserved under the *National Parks and Wildlife Act 1974* (NPW Act) on the northern side of the current highway alignment and which is also included within the curtilage of the State Heritage Register Hartley Historic Site. From a NPWS perspective, these proposed areas of encroachment require revocation from NPWS estate before on-ground works commence.

Response

The proposal will have a moderate impact on three SHR listed items: the Hartley Historic Village (SHR00992, LEP I020), Billesdene Grange (LEP I023), and Fernhill (SHR00225, LEP I043). In accordance with the *Heritage Act 1977*, and as identified in Safeguard NH16, Section 60 permits for excavation and removal of vegetation at Hartley Historic Village and Fernhill will be required for the proposal. Impacts to items listed on the SHR will be minimised through the implementation of safeguards identified in Section 6.2 of this submissions report including investigating options to reduce the construction footprint within SHR curtilage and undertaking archival recording (Safeguard NH06). Construction works in the area will not commence until the land has been revoked.

Issue description

Although the revocation process is being progressed separately, NPWS original submission identified that the REF should detail this process and any compensation proposal. This is not evident in the REF and the 2 processes of revocation and the determination of the REF are not clearly described.

Response

Revocation of land reserved under the NPW Act will be required for about 2.2 hectares for the purpose of this proposal. This action will be carried out separately from the determination of this REF. Negotiations for compensation would be subject to ministerial agreement in accordance with the NPW Act.

The revocation process will be conducted in accordance with the NPW Act. This is summarised as:

1. Compensation is generally required for revocations arising from non-permissible activities or development proposals that would provide an overall public good outcome. Compensatory land is preferably of greater size, or at minimum, equal size to land revoked.
2. Where compensation is required for revocation, it is generally in the form of land transfer to the Minister for reservation under the NPW Act. The land that is revoked would not be transferred to the recipient (in this case, Transport) until such time the compensatory land has been transferred to the Minister.
3. The NPWS Deputy Secretary and the Minister will be briefed by NPWS on potential revocation notices.
4. Once Ministerial approval is granted, NPWS will proceed to examine the potential revocation and discuss it with relevant parties
5. The proposal, including details of compensatory land, is provided to NPWS Deputy Secretary and the Minister for consideration.
6. The Minister will make a final decision on whether to proceed with the revocation proposal. Prior to seeking government and parliamentary approval, a written agreement will be made regarding compensation requirements between the Minister and the applicant (in this case, Transport).

Issue description

While the REF concludes (section 8.3, p. 486) that "Transport intends to exclude from its determination any works requiring revocation until such time that a decision has occurred, via an Act of Parliament", proposed mitigation measure PL02 (Table 7-1 Summary of safeguards and management measures, p. 467) states that acquisition of property will occur prior to construction. However, for the section of land currently reserved under the NPW Act as Hartley Historic Site, and proposed for revocation, this is required to occur before the REF can be determined for any works occurring on that land and as discussed below the lands proposed for revocation are not clearly and consistently mapped throughout the REF.

Response

Transport acknowledges that the section of the proposal subject to revocation under the NPW Act cannot be determined until the revocation bill has passed through parliament. Transport and NPWS have both agreed a dual determination for the proposal is acceptable. That is, the Coxs River Road

section will be determined first, followed by the completion of the land revocation process, then the remainder of the proposal can be determined.

Issue description

TfNSW to confirm the extent of lands required for revocation. NPWS is able to provide mapping to confirm NPWS tenured lands north of the current highway alignment.

Response

There are four NPWS lots that require revocation:

- Lot 7302 DP1165392
- Lot 142 and 143 DP1186102
- Lot 8 DP758503.

The area proposed for revocation is shown in Figure 3-1.

Issue description

The impacts of the proposed revocation are not adequately considered in the REF. The table states (p. 251) that the project would "directly truncate parts of the heritage curtilage of the item, primarily those portions to the north of the existing Great Western Highway, with minor truncation of the LEP heritage curtilage behind the Royal Hotel". We understand that, unless de-gazetted prior to the works, these lands will still be part of the State Heritage Register curtilage and will therefore require approval under the Heritage Act, for any infrastructure being located on this land.

Response

As discussed above, Transport and NPWS are progressing the revocation process for the portion of land shown in Figure 3-1, which is also subject to SHR listing. Transport will seek to amend the SHR and Lithgow LEP heritage curtilages to exclude this land from the curtilage. In the event that the truncation of the heritage curtilages is not gazetted prior to commencement of construction approval under the Heritage Act will be required for work on the SHR listed sites.

3.4 Lithgow City Council

3.4.1 Needs and options considered

Issue description

The project offers a significant positive impact to the Lithgow community. This Council understands the local, regional and national benefits of improved transport networks on connectivity between the Central West and Sydney. Hence, while Council supports this project and the broader objectives it will achieve, there are matters still requiring, we believe, more attention.

Response

Transport acknowledges Lithgow City Council's support for the proposal and has considered the concerns posed below.

Issue description

[pg. 2] The Council acknowledges that this project is just one part of an integrated transport connectivity solution for the central west. Increasing the road network capacity in isolation of the rail network will reduce the perceived viability of rail, increasing future congestion and reducing overall network efficiency. Rail connectivity stands as a critical consideration in achieving long-term efficient and safe passenger and freight connections. This is especially true noting the existing rail infrastructure in place. Hence, the Council requests Transport for NSW commence a review of existing services with the view to extending intercity rail services from Mt Victoria to Lithgow and Bowenfels in tandem with an interchange with more frequent shuttle services between Lithgow and Bathurst, Orange.

...

[pg. 11] Council acknowledges the rail network as an essential mode of transport for both commuter and commercial purposes between Sydney and the Central West, and as an equal part of a holistic transport solution for our region. Council requests a demonstrated commitment from Transport for NSW to investigate those actions which are necessary to improve rail connectivity from Lithgow to both the east and west.

Response

The NSW Government is committed to moving more freight from road to rail and already invests in the rail freight network to increase capacity, but this is not a substitute for investing in our road freight network. The Great Western Highway upgrade is being developed alongside long-term rail options, as both are needed to meet future demand and address current issues around congestion, journey reliability and safety.

The roads and trains arms of Transport for NSW are working closely on developing a multi-modal strategy for east west connections between Sydney and the Central West that makes the most of road and rail for both passengers and freight. About half the freight on the Great Western Highway is carried on the road network and about one third of the road freight between Lithgow and Katoomba begins or ends its journey in the mountains. The type of freight that needs to move by road includes refrigerated goods, fuel, construction materials from local quarries, livestock, commercial and retail goods. Much of this freight requires direct access to freight hubs, such as retail precincts, light industrial areas or home deliveries. Bulk goods such as export containers, steel, grains, and coal will

continue to rely on the rail line and 90 per cent of freight containers moving between the Central West and Sydney are already transported by rail.

The Blue Mountains line is a shared rail corridor used by passenger and freight services. Both freight and passenger services are driven by demand and timetables are developed to move both freight and passenger services across the broader rail network efficiently. The rail line is providing a reliable service for Blue Mountains commuters, however the highway will remain a vital link for the Central West and the Blue Mountains. The rail corridor is constrained due to the alignment of the Great Western Highway, the Blue Mountains National Park, and the topography. The rail line is being upgraded in sections to allow for wider trains that currently use the Sydney Trains network, so they will be able to use tunnels within the Blue Mountains.

The NSW Government has committed to investing in improvements to the rail corridor for commuters through the Faster Rail Network Strategy and is also developing a Regional Rail Strategy.

Issue description

Please note however that there is another component of this report which encourages, outside of this discrete project proposal, there is still merit in overlaying a more high-level strategic lens to the Central West's transport needs (see section 8).

Response

The strategic need for the proposal is discussed in Section 2.1 of the REF. This includes consideration of the Central West and Orana Regional Plan 2036 (Department of Environment, 2017) which provides an overarching framework to guide subsequent and more detailed land use plans, development proposals and infrastructure funding decisions for the region. The proposal is consistent with the following directions under Goal 3: Quality freight, transport and infrastructure networks:

- Direction 18: Improve freight connections to markets and global gateways
- Direction 19: Enhance road and rail freight links.

The proposal would also support key recommendations made for the transport sector by Infrastructure NSW in the State Infrastructure Strategy 2018 – 2038 (Infrastructure NSW, 2018). The proposal would increase freight capacity and efficiency of the road network (Recommendations 41 and 42) to support the mass transit system while enhancing accessibility and improving road safety in the area (Recommendations 50 and 51).

Issue description

[pg. 6] Council's ask – that the level of design for the entire project be quite exemplary (with the previous upgrade works across the Blue Mts being the benchmark. Also, that this design outcome be extended for the full length of the section of the GWH passing through urban Lithgow.

...

[pg. 10] Council's ask -

The project's high standard of design outcome be extended for the full length of the section of the GWH passing through urban Lithgow.

Response

The proposal scope does not include upgrades to the Great Western Highway through Lithgow (refer to Figure 1-1 in the REF). Transport will, however, ensure that the proposed design will tie in to the

existing highway and will be integrated into its the natural and cultural environment in accordance with design objectives Section 2.3 of the REF).

Transport acknowledges the respondent's support for the design of previous projects throughout the Blue Mountains. As noted above, Transport have applied the principles stipulated in Transport's urban design and other policies, and design principles outlined in *Beyond the Pavement* (Transport for NSW, 2020), an overarching Transport policy guiding urban design on all its projects. This includes design objective 1, which aims to develop an integrated design that fits with the existing high visual qualities, ecology and character of the Hartley Valley and its setting. As discussed above, an Urban Design Plan will be prepared to facilitate an integrated urban design and engineering design outcome for the proposal and will detail the application of the design principles as identified in the REF as per Safeguard LV01 in Section 6.2 of this submissions report.

Issue description

Council requests details regarding the plans that are in place to improve the adjacent rail network to better balance demand and reduce road traffic emissions and seeks confirmation that Transport for NSW commits to developing such a solution within a reasonable timeframe.

Response

The NSW Government has committed to investing in improvements to the rail corridor for commuters through the Faster Rail Network Strategy and is also developing a Regional Rail Strategy. As noted above, improvements in rail are occurring concurrently to this proposal.

Issue description

It is now outdated and inappropriate for the Bells Line of Road to direct heavy vehicles through the heart of the Lithgow city centre and urban area. Consideration of, and commitment to, enhancements to both the Bells Line of Road and the Darling Causeway are considered warranted to increase the viability of this route.

Response

Based on transport studies and investigations, the Great Western Highway is the key corridor for transporting goods and people between the Central West and Sydney and traffic volumes are expected to continue to increase.

The Great Western Highway through the Blue Mountains is already at capacity during certain periods. The upgrade provides opportunities to improve the movement of local residents and boost the tourism industry by relieving congestion and providing safer, more reliable journey times.

Even if the Bells Line of Road was upgraded – and early indications suggest this would be at a cost far in excess of this program – significant traffic volumes would still remain on the Great Western Highway.

An upgrade of the Bells Line of Road would also potentially have a significant impact on the World Heritage Area and has extremely challenging terrain. Similarly, upgrades to the Darling Causeway are heavily constrained due to the terrain and its proximity to the Blue Mountains National Park and World Heritage Area.

Upgrading the Bells Line of Road and Darling Causeway remains a longer term priority for the NSW Government.

3.4.2 Proposal description

Design

Issue description

[pg. 1] Council strongly advocates for the demonstrated commitment of Transport for NSW to achieving exceptional design outcomes, with respect to the principles of active transport, amenity, and accentuation of environment and heritage. It is inevitable that there will be impacts on these as an outcome from such a project, however attention to these details and delivery of extraordinary outcomes will help to offset such effects. We acknowledge that much has been discussed with the administration on this front, however the detail is yet to be developed. Also, the aesthetic of a city matters in terms of the impression that visitors gain as they approach and pass through it. Today, the section of the GWH through urban Lithgow is disappointing.

...

[pg. 5] The Council requests continuation of TfNSW's dedication to exceptional visual and aesthetic design, environmental and heritage offsets and an active transport focus to offset these impacts. With this approach, Lithgow will secure the best of both approaches, to the fullest extent possible. This submission encourages that further project development occurs within a prism which uses either design remedies, project adjustment (lower speeds and less urban footprint) or a combination of the these to achieve acceptable outcomes for the Hartley Valley.

...

[pg. 10] Without limiting the forms that this might take, Council's officers have suggested in meetings so far initiatives such as:

- As mentioned elsewhere in the report – a very high standard of design outcome for all works, reflective and worthy of place, and the landscape, visual and heritage characters.

Response

Transport acknowledges the Lithgow City Council's recognition of Transport's dedication to the proposal design. Transport will continue to apply the principles stipulated in Transport's urban design and other policies, and design principles outlined in *Beyond the Pavement* (Transport, 2020) to ensure the proposal will meet its design objectives.

As provided in Section 2.3 of the REF, the proposal aims to develop an integrated design that fits with the existing high visual qualities, ecology and character of the Hartley Valley and its setting, while minimising impacts to the integrity of heritage sites, significant trees and cultural values of the community. Transport is also committed to creating a road corridor that responds to the natural and cultural environment, which enhances local and regional connectivity to evoke the underlying character of the Hartley Valley and surrounds.

To align with the proposed design objectives (see Section 2.3 and Appendix L of the REF), Transport will consider minimising vegetation clearing and maximising revegetation and planting opportunities along the Great Western Highway where possible, particularly in areas that require screening (refer to Safeguard LV02 in Section 6.2 of this submissions report). Where possible, the proposal will also avoid

heritage sites and maximise the use of existing infrastructure to minimise impacts on the community. Where there are potential impacts on heritage,

An Urban Design Plan will be prepared to facilitate an integrated urban design and engineering design outcome for the proposal and will detail the application of the design principles as identified in the REF (Safeguard LV01). Also, detailed design of the proposal will consider opportunities to reduce the construction footprint, explore the maximisation of revegetation and planting opportunities along the upgraded highway where possible, and ensure residual land is developed to complement the existing landform (Safeguard LV02).

The proposal would improve conditions for pedestrians and cyclists by providing a range of improvements to the existing active transport network and facilities including:

- A 2.5 metre nearside sealed shoulder on the Great Western Highway for on road cyclists
- A two metre nearside sealed shoulder on Service Road 2 and Coxs River Road for on road cyclists
- A two metre nearside sealed shoulder on Service Roads 1 and 3 for on road cyclists.

Design development has considered the future development of shared paths in the vicinity of the proposal. The alignment and structure of the future shared paths would be developed and finalised during future design development and in consultation with Lithgow City Council and other relevant stakeholders.

Transport is in the process of developing a CIS in accordance with Safeguard AH04 in Section 6.2 of this submissions report. The strategy will be incorporated into the Urban Design Plan (Safeguard LV01) to highlight landscapes of heritage in the Hartley Valley. Transport has engaged consultants who are currently progressing an Aboriginal Cultural Heritage Study and Non-Aboriginal Thematic Heritage Study.

Transport is committed to consultation with key stakeholders during this process.

Rest areas

Issue description

[pg. 1] Most importantly, the Council strongly objects to the construction of any rest areas (for heavy vehicles or otherwise) within the Hartley Valley. It remains a fact that there are lands far more suitable for such a purpose west of Wallerawang, just 18 minutes west of the current proposal by Transport for NSW. Truck stops are completely incongruous with the natural beauty and heritage significance of the Hartley Valley. We respectfully say that in our opinion an alternative solution to managing driver fatigue can be, and must be, found. The Council requests relocation to the west of Wallerawang.

[pg. 7] The inclusion of truck stops in the Hartley Valley is completely incongruous with the amenity of the surrounding landscape. The Hartley Valley is one of Lithgow's most scenic and historic areas, offering unparalleled vistas and unmatched historic value. Council strongly rejects this aspect of the proposal and firmly requests that these be moved to lands west of Wallerawang. If this is not achieved, the facilities will need to have a very high aesthetic outcome. Commercial activities within such truck stops should also be absolutely prohibited.

Response

The heavy vehicle rest areas have been located in accordance with the Heavy Vehicle Rest Stop Strategy for the Great Western Highway Upgrade Program. They address the need for a major Rest

Area (Class 2) between the M4 Service Centre at Eastern Creek and the Caltex Yetholme Service Centre. Currently the driving time between these two major rest areas is in the order of two hours. The construction of the two proposed Heavy Vehicle Rest Areas in the Hartley Valley will reduce the travel time for heavy vehicles between major rest areas to in the order of one hour, which is the desirable standard. Moving the rest areas to Wallerawang would create an unequal amount of travel time between the existing rest areas – M4 Service Centre at Eastern Creek and the Caltex Yetholme Service Centre. The driving time from Caltex Yetholme Service Centre and Wallerawang would be about 20 minutes, whilst the driving time between Wallerawang and the M4 Service Centre at Eastern Creek would be about two hours.

A review of the estimated demand for the proposed heavy vehicle rest areas has resulted in:

- a reduction from 13 to 10 short term heavy vehicle parking spaces at the westbound rest area. This provides the opportunity to increase the number of light vehicle (currently seven) and caravan (currently five) parking bays in the detailed design phase of the proposal
- a reduction from 12 to nine short term heavy vehicle parking spaces at the eastbound rest area. This provides the opportunity to increase the number of light vehicle (currently four) and caravan (currently four) parking bays in the detailed design phase of the proposal.

Transport acknowledges the Lithgow City Council's opposition and understands the concerns regarding visual impacts as a result of the proposed rest area locations. The rest areas have been designed into a cutting to reduce both their noise and visual impacts. To further manage visual impacts, treatments have been proposed including the provision of extensive native planting to screen the rest areas from the road network (refer to Section 5.3.2 in Appendix L of the REF). Transport is committed to the preparation of an Urban Design Plan will provide practical detail on the application of the design principles identified in Appendix L of the REF (Safeguard LV01). The design plan will ensure that the rest areas are fully integrated into the existing landscape whilst still providing filtered views from the new highway to acknowledge their presence. Scattered native tree planting will provide shade for vehicles and a park-like atmosphere in the rest areas (refer to Section 7.6.3 in Appendix L of the REF). Further work will be carried out throughout detailed design to reduce their impacts through enhanced urban design and landscaping as per Safeguard LV02 in Section 6.2 of this submissions report.

The increased light vehicle and caravan capacity will allow more tourists to stop and learn about the Aboriginal and non-Aboriginal heritage of the area from the information boards proposed at both rest areas. Transport is committed to consulting with the community to determine the most appropriate information to be published on these boards.

Transport will continue to consult with the community in the Hartley Valley, the Central West and the freight transport industry to achieve the best outcome for all stakeholders.

Baaners Lane

Issue description

A key linkage of Lithgow's local road network is the route from Baaners Lane, through Browns Gap Road, to the Lithgow city. At this stage, the proposed route is made less efficient by requiring motorists to negotiate 4-lanes of traffic, extending the route halfway to Coxs River Road and subsequently back along the existing Great Western Highway (service road) to Browns Gap Road. In this area, Council notes that the road infrastructure required to make this manoeuvre visually clashes with that of the Hartley Village. It is essential that if no changes can be made to the infrastructure through a reduction to the design speed or the like, that effective offsets are delivered to lighten, soften and reflect that this precinct is the entrance to the Lithgow LGA.

Response

Connectivity between Baaners Lane and Browns Gap Road and the location of the Baaners Lane and Great Western Highway intersection was raised as a key concern in the community feedback received by Transport in previous phases of the proposal. As such, a review was carried out by the proposal team in a workshop held in March 2021 to investigate alternative options around this connection. The options reviewed at the value management workshop were:

- Option 1: Right turns in and out of Baaners Lane across the Great Western Highway (at-grade intersection). Residents along Baaners Lane travelling to Browns Gap Road will need to travel via Great Western Highway
- Option 2: Bridge across the Great Western Highway and staggered T-intersection with grade separation
- Option 3: New service road along Great Western Highway for connection to Coxs River Road (at-grade intersection).

A paired comparison and option assessment was carried out during the workshop which resulted in both Option 1 and Option 2 having merit, and that further consultation with the community would be required. Transport met with the Hartley District Progress Association in March 2021 and based on feedback from this meeting, it was determined that Option 1 would be developed in the concept design and is presented in the REF. The Traffic and transport assessment (Appendix E of the REF) assessed that the proposal would lead to a reduction in crashes on the Great Western Highway of 57 per cent, which includes a 50 per cent reduction in crashes from intersections from adjacent approaches.

As identified in Safeguard CU03 in Section 6.2 of this submissions report, further design refinements, including options to simplify intersections, would be considered further as part of the detailed design process to reduce potential impacts where feasible. Where there will be visual impacts, an Urban Design Plan will be prepared to facilitate an integrated urban design and engineering design outcome for the proposal and will detail the application of the design principles as identified in the REF (Safeguard LV01). The detailed design of the proposal will consider opportunities to reduce the construction footprint, maximise revegetation and planting opportunities along the upgraded highway where possible and ensure residual land is developed to complement the existing landform (Safeguard LV02). Transport will consider, at locations where greater visual impacts have been identified, the specification and planting of more mature sized shrubs and trees to help reduce the visual impact upon opening the road since the proposed planting will take a few years (between three and 10 years) to establish at adequate height. As per environmental safeguard LV03, landscaping planting and maintenance will be in accordance with the Lithgow City Council Weed List and include indigenous species endemic to the area. As noted above, the proposed speed limit is suitable for the proposal.

Operational maintenance

Issue description

[pg. 2] While Transport for NSW has acknowledged that the Mt Victoria Pass, inclusive of road surface, pavements, and the bridge, will remain under the care and control of TfNSW upon completion of the project, there are other significant lengths of the existing alignment which will revert to Council management as local roads upon completion of this upgrade. These assets hold significant value and carry financial and risk management liabilities with respect to asset depreciation, maintenance, and renewal. It is financially perilous for Council to accept these responsibilities without a commensurate long term financial offset. To do so would result in necessary reductions in service across Council's existing functions. On behalf of our community, the Council requests that Transport for NSW engage with the administration to develop a solution to this problem which does not result in an adverse impact to Lithgow Council or its residents.

...

[pg. 7] As a result of this project, it is expected that approximately 10 kilometres of the existing Great Western Highway alignment will be designated as a local road and transferred to the management of Lithgow City Council. There is no current commitment by the State Government to provide the additional revenue required to maintain and manage this asset. As it stands, the transfer simply serves to increase Council's asset base without a commensurate increase in revenue to meet requirements. This is a cost shift and will result in reduced service levels for other public assets under Council's control. Council rejects these roads moving across to Council responsibility in the absence of assured recurrent funding, such as the existing BLOCK grant arrangement.

...

[pg. 9] Council seeks confirmation regarding a level of service for ongoing maintenance of any environmental offsets and landscape character designs delivered as a result of this project. As it stands, the environmental assets delivered through the median of the recently upgraded Forty Bends section of the Great Western Highway have been somewhat allowed to deteriorate and consequently poorly reflect upon the maintenance expectations of what is to be delivered in the future. The standard of environmental design is just one part of the discussion, and Council firmly advocates for an agreement of high standards of ongoing maintenance, reflective of the surrounds and the intent of the overarching project.

...

[pg. 10] Council's ask –

- On-going maintenance of the landscape corridor

Response

Transport will continue to consult with council to come to an agreement of ownership and management of those assets. Transport will not transfer ownership of assets to Council unless the infrastructure is in an acceptable condition.

Landscape maintenance will be carried out by Transport within the road reserve and rest areas. Native vegetation will be re-established in accordance with *Guide 3: Re-establishment of native vegetation of the Biodiversity Guidelines: Protecting and managing biodiversity of RTA projects* (Safeguard BI06 in Section 6.2 of this submissions report). The Flora and Fauna Management Plan prepared for the proposal will include protocols to manage weeds and pathogens during construction (Safeguard BI01). Weed species will be managed in accordance with *Guide 6: Weed management of the Biodiversity Guidelines: Protecting and managing biodiversity of RTA projects* (Safeguard BI25).

Ongoing maintenance of any environmental offsets will be managed by DPE.

3.4.3 Consultation

Issue description

Lithgow Council's ask - that Transport for NSW continue to facilitate the deep involvement of the administration in the detailed design process, and provide briefings to the Council detailing progress, as requested

Response

Transport is committed to further consultation with Lithgow City Council and other relevant stakeholders during future design development. A CCS will be prepared for the proposal to facilitate communication with the local and regional communities including Lithgow City Council in accordance with Safeguard SE01 in Section 6.2 of this submissions report. The strategy will include but is not limited to procedures and mechanisms for regular distribution of information about the proposal and mechanisms to keep relevant stakeholders updated on construction activities, schedules and milestones and avenues.

3.4.4 Traffic and transport

Safety and efficiency

Issue description

With the considerable heavy traffic, and other aspects such as the climate, this results in hazardous driving conditions. Council acknowledges that the works will greatly enhance the safety of the road.

Response

Transport acknowledges Lithgow City Council's support of the proposal regarding the enhanced safety of the Great Western Highway – Little Hartley to Lithgow (West Section) once the proposal is operational.

Connectivity

Issue description

There is the need to consider the impact on local roads (Browns Gap Road) while the works are undertaken as drivers will try to avoid highway construction. As Browns Gap Road will take drivers into Lithgow township it will add to the vehicles travelling along Chifley Road/Main Street. There are expected to be broad detours whilst construction occurs, however there is no assessment or comment on how TfNSW aims to reduce the impact to Council's local road network or restore any impact that occurs. Council requests consideration of this matter.

Response

While it is acknowledged that Browns Gap Road is used by locals as an alternate route into Lithgow, it is not anticipated that numbers would increase substantially during construction. Through traffic is

expected to remain on the Great Western Highway. There will be some instances during off peak times that lane closures or contraflow arrangements are required to complete works such as pavement resurfacing on the existing Great Western Highway, however Transport would aim to maintain at least one travel lane in each direction at all times. The exception would be during periods of blasting where the highway would need to be closed for a period of up to 15 minutes to maintain safety clearances.

All temporary closures, alternate traffic flow arrangements or detours would be communicated to all affected stakeholders and the general public in accordance with the Communication Strategy for the project. A Traffic Management Plan (TMP) will also be prepared for the construction phase of the proposal which will include details on site specific traffic control measures to manage and regulate traffic movement
on the Great Western Highway and the local road network.

Transport will continue to consult with Council in regard to potential impacts or changes to the local road network.

Issue description

It is requested that TfNSW consider the impact of vehicles (particularly heavy vehicles) using Bells Line of Road to avoid the construction works and how these effects impact traffic travelling through Lithgow. There will be heavy vehicles that will come across the Darling Causeway or straight down the Bells Line of Road to avoid delays. There may also be an increase traffic down Hartley Vale Road (light vehicles) for the reasons listed above. Council notes that Hartley Vale Road already suffers when there is an accident on Victoria Pass with light vehicles (and trucks at times) using it as a by-pass.

Response

The highway would need to be temporarily closed for periods of up to 15 minutes at a time during blasting to maintain safety clearances. The proposal would aim to maintain at least one travel lane in each direction at all other times during construction so as to maintain traffic flow. As noted in the response above, a TMP will be prepared for the construction phase of the proposal which will include details on site specific traffic control measures to manage and regulate traffic movement on the Great Western Highway and the local road network.

Closures would be planned well in advance and timings communicated to the transport and trucking industry to assist them in timing their journeys to avoid temporary closures. It is acknowledged however, that heavy vehicles may use the Darling Causeway or other alternate route to avoid delays. Transport will continue to engage and consult with industry and Council to manage ongoing impacts during construction in accordance with the CCS (Safeguard SE01).

Traffic volumes

Issue description

The projected traffic increases of 0.4 [per cent] and 1.3 [per cent] per year into 2026 and 2036 - this seems conservative as not only would there be increased traffic due to the improved travel times (more attractive for businesses to move into the central west) but also more traffic using the Great Western Highway instead of the Bells Line of Road. Also, tourist traffic would potentially increase the weekend/holiday traffic through improved travel times and driving comfort. This latest upgrade is a part solution, but a comprehensive, integrated and holistic transport and freight solution for the central west (inclusive of improvements to rail services at a minimum) is needed.

Response

As identified in Section 4.1 in Appendix E of the REF, the projected traffic increase of 0.4 per cent per annum for light vehicles and 1.3 per cent per annum for heavy vehicles between 2016 and 2036 is for the scenario without the proposal. A more conservative assumption of two per cent traffic growth was used to assess the potential performance of the proposal (see Section 5.1 in Appendix E of the REF). The high rate was used for the proposal to account for an increase in the number of road users due to the better performance of the proposal compared with the existing Great Western Highway.

The proposal forms part of the broader Greater Western Highway Upgrade Program that aims to reduce congestion and delivery safer, more efficient and reliable journeys for those travelling in, around and through the Blue Mountains, whilst also better connecting communities in the Central West to Sydney. The Great Western Highway Upgrade Program is packaged into separate East, Central and West Sections. Upgrades to other sections on the Great Western Highway throughout the Central West, such as the Bells Line of Road and Darling Causeway, will be further considered by Transport in the future.

In the development of the proposal, Transport has also considered the Central West and Orana Regional Plan 2036 (Department of Environment, 2017) which provides an overarching framework to guide subsequent and more detailed land use plans, development proposals and infrastructure funding decisions for the region.

As noted above, the roads and trains arms of Transport for NSW are working closely on developing a multi-modal strategy for east west connections between Sydney and the Central West that makes the most of road and rail for both passengers and freight (refer to Section 2.1.1 for further detail regarding rail options for freight).

Issue description

Further, Council requests further information regarding contingency planning for higher-than-expected increases to traffic flow and the capacity of this new asset to meet demand in these scenarios. Without improvements to the rail network, this is a real concern.

Response

As noted in Section 3.6.2, improvements in rail are occurring concurrently to this proposal. The roads and trains arms of Transport for NSW are working closely on developing a multi-modal strategy for east west connections between Sydney and the Central West that makes the most of road and rail for both passengers and freight. The NSW Government has also shown commitment to investing in improvements to the rail corridor for commuters. Planning for rail, however, is out of scope for this proposal.

The proposal has been designed to provide efficient, free flowing traffic conditions with capacity to safely accommodate forecasted traffic volumes. As outlined in Section 7.2 of the REF, traffic modelling indicates that traffic movement will increase along the Great Western Highway between Little Hartley and Lithgow for future years 2026 and 2036 by a conservative assumption of two per cent traffic growth. The upgrade of the existing highway to a four-lane divided highway would accommodate this projected increase in traffic on the Great Western Highway between Little Hartley and Lithgow.

Speed limits

Issue description

[pg. 1] Council stands with the Hartley District Progress Association (and many others within the community) in not favouring the proposed design speed of 100km/h. This design choice has resulted in an imposing footprint inclusive of merging lanes, ramps, bridges, grade separated intersections and parking bays, all which compromise and place at risk the natural endowments and heritage features of the locale. A reduction of the design speed to 80km/h will minimise the need for such imposing design treatments. Such a decision would strike the right balance between a more efficient, safer road network that is reflective of both local needs and those of through traffic, while also reducing the compromise of amenity, as will be the case with the current proposal.

...

[pg. 5] Lithgow Council's ask - that Transport for NSW reduce the design speed to match the connecting network and ensure consistency across the Blue Mountains.

Response

Transport acknowledges the concerns of the Lithgow City Council and community respondents regarding the proposed speed limits.

A reduction in speed limit to 80 kilometres per hour would not significantly reduce the footprint of the proposal. The proposal has been designed to provide safe, efficient and free flowing traffic along the Great Western Highway between Little Hartley and Lithgow. The posted speed limits on the Great Western Highway of 80 to 100 kilometres per hour allow for this occur whilst minimising potential safety risks.

Further, combining local and through traffic onto an 80 kilometre per hour road is not a safe solution. The proposed design provides 60 kilometre per hour service roads with grade separated or improved intersections and junctions, and a separated 80 to 100 kilometre per hour highway for through traffic. This provides safer movement for motorists within the community and more efficient movement for through traffic.

3.4.5 Noise and vibration

Issue description

There is reliance on estimated figures in the section that deals with construction noise levels and vibrations which are likely based on historical data. Council has concerns relating to the sound travelling from the Forty Bends area bouncing off the existing retaining structures into the valley on the other side (McKanes Falls Road area). It is requested that such effects be considered, and measures be put in place to minimise the impact of these compounding effects.

Response

A noise model of the construction footprint has been used to predict noise levels from the operation of the proposal to the surrounding receivers. The model uses Calculation of Road Traffic Noise (CoRTN) (UK Department of Transport, 1988) algorithms in SoundPLAN software. Local terrain, receiver buildings and structures were digitised in the noise model to develop a three-dimensional representation of the proposal and surrounding areas. The noise model includes a 'digital ground

model' which is an accurate 3D representation of the terrain in the construction footprint. The ground model was constructed from LIDAR point cloud data and one metre contours.

Transport have committed to further noise monitoring during detailed design. Any changes in design will include additional noise monitoring and necessary adjustments to the noise model. To assist in understanding the noise impacts of the highway upgrade, noise monitoring at a location representative of residents at this location will be carried out during the detailed design phase and again following completion of the proposal. Potential noise mitigation measures are to be considered as per Safeguard NV13 in Section 6.2 of this submissions report.

Further noise monitoring will be carried out once the proposal is operational to validate the post-construction noise model, in accordance with the RTA Environmental Noise Management Practice Note 8. In the circumstance that the validation of the model indicates additional receivers are eligible to receive consideration of noise mitigation measures, these will be addressed in accordance with the process outlined in Safeguard NV13.

Issue description

The proposal for truck stops in the Hartley Valley will also likely result in unacceptable noise impacts – another reason to not locate these within the valley and instead, choose an unpopulated area west of Lithgow.

Response

As stated in responses above, Transport has chosen the proposed rest area locations to address the need for a major Rest Area (Class 2) between the M4 Service Centre at Eastern Creek and the Caltex Yetholme Service Centre.

Transport acknowledges that the rest areas may introduce additional impacts and maximum noise levels from events such as truck airbrake releases, which have been considered in the noise assessment, at locations NCA05 and NCA06 (refer to Table 6-51 of the REF). Noise monitoring in the vicinity of the rest areas found maximum noise level events are a regular feature in the existing environment, with maximum noise events typically ranging from around 65 to 90 dBA. Noise levels and maximum events are expected to generally be louder from the realigned Great Western Highway than vehicles idling in the rest areas during operation and were therefore considered in the noise model to determine the 'worst case' scenario. An operational noise assessment would be carried out during detailed design to assess potential noise impacts from the proposal, including rest areas. Sensitive receivers will be contacted should operation noise mitigation be considered based on the results of updated modelling.

Also, it should be noted that the proposed rest areas are for a short-term rest stop to check loads and provide sufficient facilities for a break rather than a long-term rest area. A review of the estimated demand of the proposed heavy vehicle rest areas has resulted in a reduction in vehicle parking spaces. The short-term design and reduced parking spaces will reduce idling and therefore, noise impacts, at the proposed rest areas.

Heavy vehicles using the proposal would not have to traverse the existing steep gradients, which would reduce heavy vehicle operation noise from the existing condition. Transport will further consider noise mitigation around the rest areas during detailed design that will also serve as a mitigation to reduce visual impact and blend in with the surroundings. Key stakeholders will be involved in the development of these urban design features.

For receivers that qualify for consideration of 'additional noise mitigation' mitigation will be provided in accordance with Safeguard NV13 in Section 6.2 of this submissions report.

3.4.6 Aboriginal heritage

Issue description

[pg. 1] Council has heard the heartfelt calls of our indigenous community with respect to the impacts of this project on key, culturally significant sites. With particular emphasis, we refer to the Possum Dreaming site [redacted]. Council understands that the alignment in this area impacts achievable grades for ascent and descent and this represents a challenging design effort. However, we have been briefed that this site is entirely unique and comparatively significant for generations of the local indigenous community, local Aboriginal culture, heritage and custom. The Council requests all other alignment options be considered, further consultation occur with the Aboriginal community, and a report be made publicly available on the outcomes of this process.

...

[pg. 8] The REF identifies potential impacts on aboriginal cultural values including a possum skin processing ground for the Wiradjuri people [redacted] The Council has heard the heartfelt calls of our indigenous community with respect to the impacts of this project on this key, culturally significant site. This site is entirely unique and comparatively significant for generations of our indigenous community, local Aboriginal culture, heritage and custom. The Council requests all other alignment options be considered, further consultation occur with the Aboriginal community, and a report be presented to Council on the outcomes of this process.

...

[pg. 9] Council's ask – to minimise impact to this most vulnerable site, all other alignment options be considered, further consultation occur with the Aboriginal community, and a report be made publicly available on the outcomes of this process

...

[pg. 11] Council supports a relocation of the River Lett Hill alignment to eliminate, or at least greatly reduce, impacts to the most precious of indigenous cultural sites, and further consultation occur with the Aboriginal community on this matter.

Response

Transport recognises the rich cultural heritage present in the Hartley Valley, and across the Great Western Highway corridor. Transport have consulted with the Aboriginal community regarding the possum dreaming site, including its location in relation to the proposal, and it is acknowledged that the site is significant to the Aboriginal community. The possum dreaming site area is large, about eight hectares based on information provided by the Aboriginal community. The existing concept design and construction footprint will impact a small portion of the site (less than 0.5 hectares) and will be subject to fill embankment works. Further studies and consultation with Aboriginal community will be conducted to find out the extent of the possum dreaming site and implement mitigation around it. No impacts to Aboriginal sites are anticipated outside of the construction footprint.

Safeguards and management recommendations have been developed in consultation with RAPs to avoid impacts where possible and where impacts are unavoidable, to effectively mitigate them (refer to Section 6.2 of this submissions report). These measures include, but are not limited to:

- Preparation of an Aboriginal Heritage Management Plan (AHMP), which will document standard procedures for, but are not limited to unexpected finds, management and curation of

salvaged Aboriginal objects, and detailed locations and installations procedures for fencing and protective coverings (Safeguard AH01)

- Consider opportunities to minimise impacts to four Aboriginal heritage sites during detailed design (Safeguard AH02)
- Investigate the feasibility of retaining portions of Aboriginal sites that are located under elevated structures bridges during detailed design (Safeguard AH03)
- Consider interpretation elements for design integration in the Hartley Valley, including public works of art, interpretive signage, bridges, earthworks and plantings (Safeguard AH04)
- Construction works will be closely confined to the minimum possible area required for construction activities. Haulage and other access roads will be designed and located to minimise potential disturbance of soils (Safeguard AH05)
- Temporary protective fencing for key Aboriginal heritage sites (Safeguard AH06)
- Salvage collection for seven sites and salvage excavations for nine sites (Safeguard AH07).

As outlined in Section 2 of the REF, constraints mapping was developed and considered during initial corridor selection by investigating the environmental and archaeological context of the area and using a predictive model (RTA, 2008). The options assessment was conducted in consultation with the community and the current route, following the existing disturbed corridor of the Great Western Highway, has been identified to have the least impact on areas of archaeological potential compared to the alternative options.

All reports related to the proposal will be made publicly available on the project website **nswroads.work/gwhd**.

Issue description

The Aboriginal groups consulted with during development of the REF are not listed in the REF report. Through subsequent contact by Council staff, [redacted] Aboriginal Corporation has advised that they were not consulted.

[redacted] Aboriginal Lands Council has statutory responsibility for, but little direct engagement in the Lithgow Community.

It will be imperative that local groups and individuals are given the opportunity to participate in the engagement and consultation process. There is likely to be a significant amount of un-recorded local knowledge that needs to be captured in order to appropriately assess and mitigate construction impacts.

Response

Transport has consulted with the Aboriginal Corporations and Land Councils in accordance with the Procedure for Aboriginal Cultural Heritage Consultation and Investigation (PACHCI) and in accordance with Department of Planning, Industry and Environment (formerly DECCW) consultation guideline. Details of Aboriginal groups consulted during the development of the REF were not included in the REF due to agreement with the RAPs on restrictions of access, communication and publication of certain sensitive information.

Transport is committed to further consultation with RAPs for future stages of the proposal as consistent with relevant guidelines.

3.4.7 Non-Aboriginal heritage

Issue description

- Council requests the undertaking of condition assessments of local assets prior to project commencement to ensure any detrimental effects resulting from are addressed post-completion.

Response

As outlined in Section 6.2 of this submissions report, several safeguards and management measures would be implemented to minimise potential vibration impacts on heritage items. Safeguard NH12 and NH13 state that further dilapidation surveys should be completed for sensitive heritage items, including the Hartley Historic Site. Heritage listed buildings and structures will be considered on a case-by-case basis in accordance with BS 7385 Evaluation and Measurement for Vibration In Buildings – Guide To Damage Levels From Ground Borne Vibration, and would be only be assumed to be more sensitive to vibration if assessed as structurally unsound. Vibration monitoring will be carried out on sensitive heritage items for at least the period of construction. Monitoring will continue at least 12 months after the completion of works to determine if ongoing impacts are occurring, ie identify any operational damage attributable to the proposal. Surfacing and construction methods in proximity to sensitive heritage items should be in accordance with the Transport criteria for construction adjacent to sensitive heritage buildings.

Impacts associated with blasting will be managed through the following as per Safeguard NV10 in Section 7.2 of this submissions report:

- A blast management plan will be prepared prior to the start of blasting
- Trial blasts will be carried out when blasting is proposed to occur within the minimum working distances
- Monitoring of overpressure and vibration levels will be carried out at the potentially most affected receivers for each blast
- Notification of all potential affected receivers will occur at least 24 hours prior to blasting.

As there is potential for flyrock to impact areas up to 500 metres from the point of each blast, a Flyrock Management Plan will be developed in consultation with technical specialists prior to construction (Safeguard NV11). This plan will consider measures including temporary evacuation of residents, timing of blasting to minimise disruption to local residents, and use of blast mats and soil cover.

It is noted that there have been great improvements in construction methodologies and techniques, geotechnical assessment and modelling and management and monitoring measures since the 1970s, meaning that impacts from blasting can now be more accurately assessed, monitored and managed. Through the implementation of the mitigation measures described above, the likelihood of vibration impacts from blasting negatively affecting buildings is considered low.

3.4.8 Landscape character and visual amenity

Issue description

Another aspect which is important to Council is that the same high standard of design outcome that is achieved for this project be replicated for the section of GWH between Magpie Hollow and Farmers Creek. We ask that this not be viewed as an out-of-scope issue. The intention is to ensure this strategic project is not just utilitarian in terms of moving freight and people past the city, but that it also helps to positively re-define the impression of this city. We look forward to working together to achieve exemplary outcomes in this respect.

Response

The section on the Great Western Highway between Magpie Hollow Road and Farmers Creek does not fall within the proposed scope of works. In consultation with Council, Transport will consider developing an urban design plan to incorporate areas outside of the construction footprint.

Issue description

[pg. 9] Five (5) landscape character zones (LCZs) have been identified. All 5 have been assessed with a 'sensitivity' of 'moderate' and 4 with a 'magnitude' of 'high'. It is considered that LCZ 1 - Butlers Creek Valley and LCZ 3 - River Lett Valley both have a 'sensitivity' of 'high'. This would increase their assessed 'landscape character impact' to 'high' and is considered to be more accurate. In turn, this warrants a design for these sections that is cognisant of and responsive to this higher characterisation.

...

[pg. 9] Council's ask -

LCZ1 and 3 be re-classified as high in terms of landscape character and design respond to this

Response

The assessment of landscape character zones (LCZs) is outlined in Section 6.9 and Appendix L of the REF. Section 6.9.3 of the REF acknowledges that the sensitivity of LCZs 1 and 3 was assessed as being 'moderate'.

As noted in Section 2.4 in Appendix L of the REF, the following sensitivity judgements have been used as the basis for this assessment:

- Generally, water and natural environments are more highly valued than modified areas, though views over rolling farmland are still highly valued
- Areas of unique scenic quality have higher sensitivity
- A pristine environment would have greater sensitivity with less ability to absorb new elements in the landscape than modified landscapes or those areas with contrast and variety of landscapes types.

For LCZ1, despite being a modified landscape, the zone has an attractive rural scenic character, and the gently winding highway is predominately lined with exotic trees and woodland species, heightening the country/rural driving experience. As a result, the sensitivity of the zone to the proposal is assessed to be 'moderate'. Since LCZ1 is not considered a pristine environment, its sensitivity is not assessed to be 'high'.

Similarly, LCZ3 is a modified landscape and is therefore not considered pristine. As the existing road corridor is generally well vegetated with native woodland and the Hartley Historic Village is within this zone, LCZ3 is assessed to be 'moderate'.

Although the sensitivity of LCZs 1 and 3 was assessed as being 'moderate' (refer to Section 2 in Appendix L of the REF), Section 5.3 of Appendix L assessed the magnitude of the proposal and its impact to each LCZ as being 'high' for both LCZs 1 and 3. For LCZ 1, the scale of the proposal within the rural area would be substantial, resulting in the magnitude of the visual effect of the proposal on this LCZ being assessed as 'high'. Similarly, for LCZ3, the scale of the proposal, in particular the 370-metre-long twin bridges, and the extensive vegetation removal would be substantial, resulting in the magnitude of the visual effect of the proposal on this LCZ being assessed as 'high'.

Transport has developed the safeguards and management measures outlined in Section 6.2 of this submissions report with this assessment in mind. These measures will be implemented to minimise and, where feasible, mitigate the visual impacts on all LCZs.

Issue description

[pg. 9] Of specific note, we identify the precinct of Coxs River Road, Harp of Erin and locale. Largely, this area is of significance as it represents the entrance to our LGA, the visual impact of which distinctly impacts that of the Little Hartley area. Whilst visual impact of the project area is of importance, Council expects that this precinct will require special attention during the design phase. It is encouraged that the project fund a master-planning exercise for this precinct to delicately guide how it is managed and brought together as an interesting opportunity for motorists to pause and avail themselves of the history and landscape. It is expected that this could create a desirable impression and project a vision of what is to come for those visiting the greater Lithgow area.

...

[pg. 10] Council's ask -

- A master-plan for the Hartley village precinct (Harp of Erin etc.,) to allow motorists to pause and experience the character and offer of this heritage locale

...

[pg. 10] Without limiting the forms that this might take, Council's officers have suggested in meetings so far initiatives such as:

- "Master planning" or sensitive place-making for the historic Little Hartley precinct to draw out its offer to passing motorists

Response

Transport recognises the importance of Coxs River Road and Harp of Erin to the Lithgow community, and ensure that historical and cultural heritage has been considered throughout the proposal development. Master planning is not within the plans for proposal development; however, Transport will utilise information on the CIS that will help inform the urban design on built elements.

As a part of the CIS, Transport has engaged consultants who are currently progressing with an Aboriginal Cultural Heritage study and Non-Aboriginal Thematic Heritage study. The Non-Aboriginal Thematic Heritage study involves a non-Aboriginal heritage interpretation to develop heritage themes that enhance the special values of each place in the context of operational, management, planning and conservation objectives of the Project. The development of both studies will be carried out in the following steps:

- Reviews of historical documentation for preliminary themes and narratives
- Identifying community stakeholders, with connections to Country and heritage
- One-on-one consultation
- Workshops with the community stakeholders
- Key messaging
- Consider where and how these themes and stories are best exemplified.

An Urban Design Plan will also be prepared to facilitate an integrated urban design and engineering design outcome for the proposal and will detail the application of the design principles as identified in the REF in accordance with Safeguard LV01 in Section 6.2 of this submissions report. Detailed design will consider opportunities to reduce the construction footprint, explore the maximisation of vegetation and planting opportunities along the upgraded highway, and ensure residual land is developed to complement the existing landform (Safeguard LV02).

Where greater visual impacts have been identified, Transport will also consider the specification and planting of more mature sized shrubs and trees to help reduce the visual impact upon opening the road since the proposed planting will take a few years (between three and 10 years) to establish at adequate height. As per Safeguard LV03, landscaping planting and maintenance will be in accordance with the Lithgow City Council Weed List and include indigenous species endemic to the area.

As summarised in Section 6.5 and Appendix H of the REF, the indirect (visual) impact of the proposed works on the Harp of Erin has been assessed to be minor, however this can be minimised through landscaping and sympathetic plantings for the new alignment. This may include earthworks to blend the required batter slopes into the existing topography, minimising the removal of existing vegetation and planning revegetation or screen plantings to match the surrounding landscape (Safeguard NH11). The proposed works are therefore assessed to be of negligible impact to the heritage significance of the Harp of Erin.

3.4.9 Socio-economic

Issue description

Local heritage and tourism, as well as some existing local economic activities will be impacted. There is the case therefore, for the project to deliver other outcomes to offset through long term recovery or stimulus type actions. Without limiting the forms that this might take, Council's officers have suggested in meetings so far initiatives such as:

- Heritage - interpretation infrastructure, wayfinding and marketing
- Local tourism offers – a strategy and infrastructure to facilitate active tourism on a network of pedestrian and cycle paths/routes. The community, such as the HDPA, offer great initiatives in this respect. It is suggested that TfNSW work closely with Council and the community to identify the suite of options available for tourism and active transport offers, giving social licence to the project.
- Any other measures to cause motorists to pause in the valley and experience its offer

Response

The proposal has been prepared to improve the road safety and road network connections for the Little Hartley to Lithgow section of the Great Western Highway. This would directly lead to an improvement in accessibility of townships to tourists from Sydney and NSW Central West. As discussed in Safeguard AH04, several interpretation elements will be considered for design

integration to acknowledge the cultural values of the area including interpretive signage, public works of art, bridges, earthworks and plantings. This will be included in the CIS currently under development, which will be incorporated into the Urban Design Plan (Safeguard LV01) to highlight landscapes of heritage in the Hartley Valley.

Design development has considered the future development of shared paths in the vicinity of the proposal. The alignment and structure of the future shared paths would be developed and finalised during future design development and in consultation with Lithgow City Council and other relevant stakeholders.

The proposal would improve conditions for pedestrians and cyclists by providing a range of improvements to the existing active transport network and facilities by providing:

- A 2.5 metre nearside sealed shoulder has been provided on Great Western Highway. It is anticipated that the sealed shoulders are sufficient to accommodate on road cyclists on both sides of each carriageway of Great Western Highway
- A two metre nearside sealed shoulder has been provided on Service Road 2 and Coxs River Road for on road cyclists
- A two metre nearside sealed shoulder has been provided on Service Roads 1 and 3 for on road cyclists.

During construction, signage will be provided to key business locations such as Little Hartley and Hartley Historic Village in accordance with Safeguard SE03.

Issue description

Council's ask -

- Significant and material actions to offset impacts from the project and to ground benefits in Lithgow and the local region/economy

Response

Transport acknowledges that the proposal will have potential impacts on the local community. Where there will be impacts, safeguards and management measures outlined in Section 6.2 of this submissions report will be implemented to minimise and where feasible, mitigate, these impacts.

To address biodiversity impacts, detailed design will consider the minimisation of native vegetation and habitat removal as per Safeguard BI02. The Biodiversity Offset Scheme (BOS) will be implemented to offset unavoidable impacts on biodiversity from development in accordance with the Biodiversity Conservation Act 2016 (BC Act).

As stated in Section 2.3.1 of the REF, the proposal's objectives are to improve economic development, improve the resilience of the road corridor between Katoomba and Lithgow, improve transport network performance and enhance liveability while being sensitive to the unique environment and cultural assets along the Great Western Highway corridor. The proposal has sought to balance the needs of the local community with the motorists and freight providers and provide benefits to all road users.

Appendix M of the REF includes a Socioeconomic Impact Assessment technical working paper which is summarised in Section 6.11 of the REF. The assessment identified that, during operation, the proposal would improve the regional accessibility, connectivity and safety of the highway which would lead to a positive community outcome through improved accessibility to education, work and leisure facilities. It is acknowledged that some local residents would be required to travel further distances to access their properties due to the direction separated lanes, however this disbenefit would be offset

by the increase in safety provided by upgraded access to the highway. Additionally, the reduction of regional and freight traffic passing through the centre of Little Hartley Valley would result in improved amenity and liveability within the town, through a reduction in noise, improved air quality and safety conditions for vehicles, pedestrians and cyclists.

Safeguard SE01 in Section 6.2 of this submissions report will be implemented to provide for ongoing community consultation through the preparation and implementation of the CCS. This strategy will inform the community and seek feedback on the developing proposal design and mitigation and management strategies that may impact the community during construction. Through the implementation of the measures set out in Section 6.2 of this submissions report and effective engagement with the community it is believed that impacts during the construction phase of the proposal can be effectively managed to maintain the liveability of the Hartley Valley.

Issue description

The Australian and NSW Governments have committed to embedding benefits into the region and this city. Studies are occurring into local population skilling and training, local employee procurement and local sourcing of services and goods. There may also be the need for local accommodation – especially given the risk that the multi-year project will otherwise result in the long-term displacement of available tourism accommodation. Housing demand and supply is being studied. It is suggested that the requirements for local employment, skilling, procurement of services and goods, and worker housing be embedded within any approval and the resulting works contracts.

Response

An assessment of socioeconomic impacts of the proposal is included in Section 6.10.3 of the REF. The proposal will bring a number of benefits to the local economy. This includes but is not limited:

- direct employment through on-site construction activities
- increased expenditure at local and regional businesses through purchases by the construction workforce
- direct expenditure associated with on-site construction activities, such as procurement of materials
- Indirect employment and expenditure through the provision of goods and services required for construction, such as truck and dog operators and waste removal companies.

The proposal would largely improve the accessibility of towns through increasing the reliability and capacity of the road networks, providing the community with greater access to business services and leading to an increased opportunity for tourists in local communities.

A number of sustainability initiatives and targets have been developed to support the sustainability principles outlined in Section 6.16.3 of the REF. A key principle is to value the community and its users by responding to community and user needs. This would include maximising opportunities for local businesses, local employment and the implementation of a Skills, Employment and Industry Development Strategy. The initiatives and targets (as detailed in Table 6-133 of the REF) have been incorporated into the safeguards and management measures (refer to Section 6.2 of this submissions report) and will inform the management plans to be developed for this proposal. During detailed design, these sustainability initiatives and targets will be further refined to ensure optimal benefits to the local community.

The Skills, Employment and Industry Development Strategy specific to the Great Western Highway Upgrade Program has been developed. The Strategy is focused on driving outcomes for local and regional people and businesses, and supporting industry growth. The Strategy was developed by analysing the data, through discussions with stakeholders including local government, through local business surveys and through the market interactive processes with potential tenders.

Specific procurement and employment requirements are determined by Transport following approval of a proposal. The construction contractor selected to carry out the works will be required to adhere to these requirements.

3.4.10 Out of scope

Issue description

It is worth noting that the Central West is perhaps the only rural, inland region adjacent to an Australian capital city which is deprived of an efficient arterial road connection. While the Lithgow to Katoomba highway upgrade will greatly improve this circumstance (especially when faster traffic flow through Blackheath is achieved in latter stages of this project) there will remain substantial inefficiencies in the section from Katoomba to Emu Plains. This is because the highway serves also as a local road system for the many villages with resulting speed restrictions (mostly 80km/h) and multiple traffic lights. The Council remains steadfast in its opinion that efficiency improvements are also required east of Katoomba to deliver a wholly efficient connection between the Central West and Sydney.

Response

Improvements to east of Katoomba are out of scope for this proposal. Upgrades to existing road corridors in proximity will be considered in future discussions.

Issue description

There is some demand for the project to commence at the Blackheath pinch point as this is the area which contributes most significantly to delay and disruption. This fact is not disputed, and the matter has already been referred to Transport for NSW. Transport have advised that the project timeline has been determined because of expected design, consultation and approvals pathways. In short, if the Blackheath pinch point were to be addressed first, the timeframe would remain the same for this section and such a decision would only extend the overall duration of the Katoomba to Lithgow project. As such, Council seeks a firm confirmation to bring together completion of the full scope of the Katoomba to Lithgow works as one project.

Response

The Great Western Highway Upgrade Program consists of:

- Medlow Bath Upgrade
- East Section – Katoomba to Medlow Bath and Medlow Bath to Blackheath
- Central Section – Blackheath to Little Hartley
- West Section – Little Hartley to Lithgow (the proposal).

These four proposals (described in Table 6-137) will be occurring both concurrently in timeframe and consecutively geographically.

Each proposal would be subject to a separate environmental assessment in accordance with the EP&A Act. These assessments would need to consider the cumulative impacts from all works that are occurring concurrently and in the vicinity of others.

While this proposal forms part of a larger package of works, as a standalone proposal, it would deliver numerous benefits including improving network performance, safety, and resilience on the highway between Little Hartley and Lithgow, and as a result, drive economic development and productivity particularly for the Central West. Once the Central section is complete, the Great Western Highway Upgrade Program in its entirety will be completed and local communities and governments can experience all the benefits of the program.

Issue description

There is no comment on any noise impact as vehicles, particularly heavy vehicles, enter and exit the new tunnel. The tunnel itself may act as a vessel to project noise and this may be more pronounced when traffic is heavy during holiday times. Council requests consideration and feedback regarding the impacts to properties in proximity to the tunnel portal.

Response

The REF assessed the potential environmental impacts of the upgrade of the Great Western Highway between Little Hartley and Lithgow (West section).

The proposed tunnel forms part of the Central Section – Blackheath to Little Hartley and will be assessed in a separate environmental impact statement (EIS). This EIS will include noise assessments related to the tunnel. Therefore, issues related to the tunnel are outside the scope of this proposal.

Issue description

Council acknowledges the remarkable pride of the Lithgow community. We feel that it is important to blur city boundaries to the extent we can and work towards consistency of themes in these areas. The highway median throughout Lithgow has not been refreshed in some time, and in particular the entrances to our town could be enhanced to reflect the same outcomes as that which we are trying to achieve with the GWH upgrade and show comparison with the standards offered by TfNSW to our neighbours. Hence, Council seeks the commitment of TfNSW to open the scope of environmental and heritage design slightly to also include the median in the 70km/h section of Lithgow. This will improve consistency of exceptional design generally, with relatively low cost compared to the extent of the broader project.

Response

Highway medians outside of the construction footprint are not within scope for the proposal. However, Transport is open to consult with Council regarding urban design plans that lead into Lithgow.

Issue description

Efficient rail (passenger and freight), alongside of road, would vastly enhance the flow of workers and visitors, supporting growth and facilitating economic development. There is the potential for a more ambitious future for the Central West (especially in a post-covid era) if the "string of pearls" comprising Lithgow, Bathurst, Orange and beyond were linked by more effective rail as well as road. Alongside of this submission to the exhibited project, Council proposes to commence separate advocacy for a comprehensive strategic transport plan for the Orana region. Council requests the support of the Transport for NSW bureaucracy in this endeavour.

Council's ask – a comprehensive strategic and integrated transport plan for the Orana region, bringing forward the potential of the Central West (especially in a post-covid era) by linking the "string of pearls" comprising Lithgow, Bathurst, Orange and beyond by more effective rail as well as road.

Response

As noted above, roads and trains arms of Transport for NSW are working closely on developing a multi-modal strategy for east west connections between Sydney and the Central West that makes the most of road and rail for both passengers and freight (refer to Section 2.1.1 for further detail regarding rail options for freight).

Traffic modelling of future year periods indicates that the proposed upgrade would provide safer, reliable and more efficient regional connections and links to and from destinations within the study area, surrounding Blue Mountains, Lithgow and Central West and Orana regions, and greater Sydney (refer to Section 6.2 in the REF).

4. Changes to the proposal

4.1 Legislative changes

4.1.1 Environmental Planning and Assessment Regulation 2021

The Environmental Planning and Assessment Regulation 2021 came into force on 1 March 2022.

The new Regulation has renumbered sections and provisions, including Clause 228, which listed the factors which Division 5.1 assessments were required to consider. This clause is now renumbered to Section 171.

The Regulation introduces two additional factors in Section 171 (previously the Clause 228 factors) for which all Division 5.1 assessments are now required to consider in determining whether the activity will have a significant impact. These two new factors are considered in Table 4-1.

Table 4-1: Additional Section 171 factors

Factor	Impact
q) Applicable local strategic planning statements, regional strategic plans or district strategic plans made under the Act, Division 3.1 Review and briefly summarise how your project aligns to the applicable planning statements and plans for the area. Local plans can be found on the Council website. Regional and district plans can be found here: ***https://www.planning.nsw.gov.au/Plans-for-your-area/Regional-Plans***	The Lithgow LEP is considered in Section 4.1.2 of the REF. The draft *Lithgow Land Use Strategy 2010 – 2030* was prepared to inform, and has been incorporated into, the Lithgow LEP. Applicable regional and strategic plans are considered in Section 2.1 of the REF, including the *Central West and Orana Regional Plan 2036*. Since publication of the REF, this plan has undergone review, with the draft *Central West and Orana Regional Plan 2041* exhibited from 22 November 2021 to 18 February 2022. The proposal is consistent with Objective 14: Protect and leverage the existing and future road, rail and air transport network and infrastructure.
r) Other relevant environmental factors	In considering the potential impacts of this proposal all relevant environmental factors have been considered, refer to Chapter 6 of the REF.

4.1.2 SEPP changes

All 45 State Environmental Planning Policies (SEPPs) and deemed SEPPs have been consolidated into 11 thematic SEPPs. The new SEPPs commenced on 1 March 2022. The SEPPs have been consolidated to align with DPE's planning principles thematic framework.

All relevant provisions from the SEPPs have been carried over into 'Chapters' within the new SEPPs. The SEPP consolidation is administrative and does not change the legal effect of existing SEPPs, therefore no additional consideration is required beyond what was provided in the REF and the application of the SEPPs still stands.

State Environmental Planning Policy (Infrastructure) 2007 (ISEPP) will now be a chapter within the *State Environmental Planning Policy (Transport and Infrastructure) 2021* (Transport and Infrastructure SEPP). In particular, Clause 94 of the ISEPP, which permits Transport to carry out the proposed works without consent, is now Section 2.108 of the Transport for Infrastructure SEPP. To maintain consistency with the REF, this submissions report continues to refer to the ISEPP.

A complete list of SEPPs referenced in the REF and their new SEPP name and chapter is provided in Table 4-2.

Table 4-2: New SEPPs

Former SEPP	New SEPP and chapter
State Environmental Planning Policy (Infrastructure) 2007	State Environmental Planning Policy (Transport and Infrastructure) 2021, Chapter 2
State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011	State Environmental Planning Policy (Biodiversity and Conservation) 2021, Chapter 8
State Environmental Planning Policy (Coastal Management) 2018	State Environmental Planning Policy (Resilience and Hazards) 2021, Chapter 2
State Environmental Planning Policy (State and Regional Development) 2011	State Environmental Planning Policy (Planning Systems) 2021, Chapter 2
State Environmental Planning Policy (State Significant Precincts) 2005	State Environmental Planning Policy (Precincts – Eastern Harbour City) 2021, Chapter 2 State Environmental Planning Policy (Precincts – Central River City) 2021, Chapter 2 State Environmental Planning Policy (Precincts – Western Parkland City) 2021, Chapter 2 State Environmental Planning Policy (Precincts – Regional) 2021, Chapter 2
State Environmental Planning Policy (Koala Habitat Protection) 2021	State Environmental Planning Policy (Biodiversity and Conservation) 2021, Chapter 4

4.1.3 Gang-gang cockatoo listed under Environment Protection and Biodiversity Conservation Act, 1999

As of 2 March 2022, Gang-gang Cockatoo (*Callocephalon fimbriatum*) is listed as Endangered under the EPBC Act. The species was not previously listed as a threatened species under the EPBC Act, however, is listed as Vulnerable under the BC Act and was assessed for impacts from the proposal in the BDAR (Appendix D of the REF).

Consideration of Gang-gang Cockatoo in relation to this updated EPBC Act listing is provided in Section 5.1.3 of this submissions report.

4.2 REF Clarification

4.2.1 Sydney Catchment Authority

It is acknowledged Section 4.1.1 of the REF incorrectly refers to the Sydney Catchment Authority when discussing the SDWC SEPP. The Sydney Catchment Authority was abolished in 2015 and should be referred to as WaterNSW. This clarification does not alter the impact assessment carried out for the REF.

4.2.2 Register of National Estate

It is noted that Table 6-67 of the REF incorrectly lists the Royal Hotel as being on the Register of National Estate (RNE). The RNE was closed in 2007 and is now an archive/reference list. NPWS noted the Royal Hotel is listed on the NSW State Heritage Register (as part of the Hartley Historic Site) and HHIMS/NPWS-OEH Section 170 Register. This clarification does not alter the impact assessment carried out for the REF.

4.2.3 Hartley Historic Site curtilage

It is acknowledged Figure 3-1d of the REF incorrectly identifies the LEP heritage curtilage of the Hartley Historic Site as NPWS land. The SHR curtilage that is NPWS land is identified and assessed in Figure 6-19, Section 6.5 and Appendix H of the REF. For clarity, the SHR curtilage is also shown in Figure 3-1 of this submissions report. Impacts to NPWS land, including details of proposed revocation, is discussed in Section 3.3 of this submissions report.

4.2.4 Social value of the Hartley Historic Site

Table 6-98 of the REF identifies the Hartley Historic Village Visitor Centre as social infrastructure, however fails to identify the historic site itself as social infrastructure. It is acknowledged the Hartley Historic Village as a whole, rather than just the visitor centre, should also have been referenced. The social value of both the visitor centre and the historic site itself have both been considered in the socio-economic assessment carried out for the proposal (Section 6.10 and Appendix M of the REF).

4.2.5 Lighting design criteria

Safeguard LV04 in the REF refers to Australian Standard AS 115.1-1986 *The lighting of urban roads and other public thoroughfares — Performance and installation design requirements*. It is noted this document has been superseded. The safeguard has been updated in Section 6.2 of this submissions report to reflect the correct Australian Standard as follows:

> **Safeguard LV04**: The design of temporary and permanent lighting will be carried out in accordance with ~~AS 1158.1-1986~~AS 1158.1.1:2005 *Lighting for roads and public spaces, Part 1.1: Vehicular traffic (Category V) lighting - Performance and design requirements* and will avoid unnecessary light spill on adjacent residents or sensitive receivers.

4.2.6 Property acquisition guidelines

In Safeguard PL02, Transport has committed to carrying out all partial and full property acquisitions and associated property adjustments in accordance with the requirements of the *Land Acquisition (Just Terms Compensation) Act 1991* and the *Transport for NSW Land Acquisition Information Guide*

(Transport for NSW, 2014). This guideline has been replaced by *Property Acquisition – A guide for residential owners* (NSW Government, 2021a) and *Property Acquisition – A guide for residential tenants* (NSW Government, 2021b). Safeguard PL02 has been updated to reflect this change, as follows:

> **Safeguard PL02**: All partial and full acquisitions and associated property adjustments will be carried out in accordance with the requirements of the *Land Acquisition (Just Terms Compensation) Act 1991* ~~and the *Transport for NSW Land Acquisition Information Guide* in consultation with landowners~~, *Property Acquisition – A guide for residential owners* (NSW Government, 2021a) and *Property Acquisition – A guide for residential tenants* (NSW Government, 2021b) . This will include the provision of monetary compensation determined in accordance with the provisions of the Act.

4.2.7 Construction staging

Section 3.3 of the REF describes construction staging for the proposal in detail. Four unique stages were identified.

Upon further review, Transport has amended the construction program for the proposal to reduce the number of sections constructed from four to two. Construction will start with the Coxs River Road section. Following this, the Coxs River Road to Lithgow section will be delivered as one package.

The amended construction program is expected to minimise the duration of construction activities. Construction of the Coxs River Road section is planned for 2023, subject to planning approval.

4.2.8 Consideration of National Trust listing

Transport acknowledge receipt of information from the National Trust in relation to heritage places listed on the National Trust register (which had been removed from the website at the time of completing the REF). Two items not already included on a statutory register (LEP, SHI, SHR, etc) were identified:

- Hartley Valley (Cox's River) Landscape Conservation Area (R2977)
- Former Police Station (R12858).

Due to Covid-19 work-from-home restrictions, the listing card for the police station was unable to be accessed and there is no address information provided in the searchable register. It was assumed for the purposes of the assessment that it was likely to be the same location described as the 'Former Bowenfels Lock-up' (as described in Appendix H of the REF).

While not specifically addressed, key aspects of significance of the Hartley Valley (Cox's River) Landscape Conservation Area, were considered as part of the assessment. However, in response to the National Trust submission, the Hartley Valley (Cox's River) Landscape Conservation Area is considered specifically below.

Listing card statement of significance

The Hartley Valley is defined by major sandstone escarpments to the north, east and, in part, to the south. The Conservation Area described in the listing is bounded by the escarpments of Hassan's Walls, the Bells Line of Road, the road from Bell to Mt Victoria, the Great Western Highway to Mitchells Pass, and the line of vegetated hills from Mt Sugarloaf to the Jenolan Caves Road and then north to Old Bowenfels. The Great Western Highway is noted as an existing physical and visual barrier, which separates the valley into two different land units:

- The eastern section is an attractive valley, with the flat floor contained by the dramatic sandstone escarpments
- The western section, while it is not as contained, is steeply undulating landscape associated with the drainage pattern of the Cox's River and Whites Creek.

The settlement pattern of the Valley reflects the early road routes over the mountains and the relatively early construction of Mitchell's Pass, which remains the major road route to this day. Little Hartley and Hartley, which developed to serve road travellers to Bathurst, remain as reminders of that early period.

The following elements are listed as being the primary features of significance to the Hartley Valley Landscape Conservation Area. Each of these is considered in turn in relation to the proposal of the Great Western Highway upgrade.

Mt Blaxland, the limit of crossing of the Blue Mountains by Blaxland, Wentworth and Lawson

The proposal is physically and visually removed from Mount Blaxland, being constrained to the proposal corridor which primarily follows the existing Great Western Highway across the valley floor. There would be no impacts on this aspect of the Conservation Area's significance from the proposal.

Patterns and evidence of early settlement, with historic towns and buildings

The patterns and evidence of early settlement, and historical towns and buildings has been a primary feature of the current and previous environmental assessments through the long life of the proposal since its inception. The key historical towns and buildings are generally subject to statutory protections, and these were considered in Section 6.5 and Appendix H of the REF. The proposal aims to preserve the pattern of occupation along the Great Western Highway, with villages bypassed where necessary to avoid impacts to heritage fabric. The existing Great Western Highway will be retained to provide local access in these instances, maintaining the pattern of settlement and its relationship to the historical travel route.

Industrial archaeology associated with mining

The industrial archaeology associated with mining within the valley is focused on the former mining village of Hartley Vale, located northeast of the proposal. It is physically and visually distant from the proposal and would not be disturbed or impacted by the proposed works.

Historic passes down the western escarpment of the Blue Mountains

The proposal does not physically or visually impinge on Mitchells Pass or any of the other historical passes down the western escarpment of the Blue Mountains. There would be no impacts on this aspect of the Conservation Area's significance from the proposal.

A rural landscape of high visual quality

It has been assessed that the proposal would affect the existing visual character of the Hartley Valley but is consistent with other projects (either completed or under construction) along the Great Western Highway and measures for management and mitigation of these impacts have been developed. This is documented in Section 6.5, Section 6.9, Appendix H and Appendix L the REF. Continued design development during the detailed design phase will further support the retention of the desired landscape character and consider options to further integrate the proposal into the existing landscape.

Safeguards BI02, NH11, LV01, LV02, and LV05 (Section 6.2 of this submissions report) will be implemented to mitigate and/or manage potential impacts as a result of the proposal. In particular, the CIS to be incorporated into the Urban Design Plan is being developed and will aim to highlight landscapes of heritage significance in the Hartley Valley.

Dramatic escarpments which are visually and geologically significant

There would be varied visual impacts as a result of the proposal with the highest visual impacts assessed at Baaners Lane, Hartley Historic Village, Walker Street and Jenolan Cave Road. Of these, only Hartley Historic Village is an identified heritage item, and impacts to it have been considered in Appendix H for the REF. The views to and from Hassans Walls, Mount York and Mitchell Ridge would not be obstructed or obscured by the proposed works.

The proposal Landscape Character and Visual Impacts Assessment (Section 6.9 of the REF) included consideration of views and vistas from the Hassans Walls (Padleys Pedestal) and Mount York (Bardens Lookout) public lookouts as two of 27 viewpoints used in the assessment. It concluded that the viewpoints were of moderate sensitivity and that the project represents a moderate visual impact to their view. This is due to the lookout points having wide visibility of the valley overall, the requirement to remove some existing vegetation, and for the amount of time required before the large-scale landscape mitigation would be effective in screening various proposal elements.

Rare and endangered plants in isolated catchments

The listing specifies seven species of rare and endangered plants related to the Dargans Creek Catchment. This catchment is located on the northern side of the Hartley Valley (near Chifley Road) and would not be impacted by the proposal. A detailed assessment of the threatened flora and fauna identified is provided in the BDAR (Appendix D of the REF) and the Addendum BDAR (Appendix B of this submissions report).

Conclusion

While the Hartley Valley (Cox's River) Landscape Conservation Area (R2977) was not specifically assessed in the technical working paper, consideration of heritage values across the proposal through the large number of other statutory listings, and consideration of landscape character, visual amenity and biodiversity values by other specialist assessments, means that there is no change to the overall assessment or management measures presented in the REF non-Aboriginal heritage assessment.

5. Environmental assessment

5.1 Biodiversity

This section provides a summary of the findings of the Addendum BDAR (Appendix B of this submissions report) completed as an addendum to the BDAR (Appendix D of the REF).

5.1.1 Methodology

Several species identified as requiring assessment have seasonal survey requirements, as outlined in Section 5.3.2 of the BDAR (Appendix D of the REF), that were unable to be met prior to the public display of the REF. Additionally, several submissions were received that raised concerns about potential impacts to Platypus (*Ornithorhynchus anatinus*), prompted by recent sightings of the species recorded by community members in the River Lett within the subject land. It is important to note that Platypus are not listed as threatened under the BC Act or the EPBC Act, however, are protected in NSW under Schedule 5 of the BC Act. In response to these submissions, the species and potential impacts to the species have been considered in the Addendum BDAR and summarised below.

Flora

Nine 0.1 hectare plots, additional to the 27 identified in the BDAR, were used to sample vegetation on the subject land to satisfy the BAM (DPIE (EES), 2020) (Figure 2-1 of Appendix B of this submissions report). The identification of PCT 1330 on the subject land during recent surveys triggered the need to conduct targeted surveys for the candidate threatened flora species *Persoonia glaucescens* (Mittagong Geebung) which was not previous returned by the BAM Calculator (BAMC) during the initial BDAR surveys.

Additionally, targeted flora surveys were carried out for threatened flora species identified as having a moderate or higher likelihood of occurring within the subject land.

Fauna

Targeted threatened fauna surveys were conducted to address the survey requirements as outlined in Section 5.3.2 of the BDAR (Appendix D of the REF). The following surveys were conducted:

Gang-gang Cockatoo

Spring and summer targeted surveys were carried out to determine if the subject land is being used by Gang-gang Cockatoo (*Callocephalon fimbriatum*) for breeding. Surveys were conducted in October and December 2021 in areas previously identified as containing large hollow-bearing trees within the subject land. Surveys involved walking transects to detect the species by visual observation, calls and/or indirect evidence. Any suitable hollows were also inspected for signs of occupation. As per the recommendations in the Threatened Biodiversity Data Collection (TBDC) (DPIE (EES), 2021a), experienced ecologists searched for signs of breeding including the presence of (a) a lone adult male or (b) an occupied nest.

Gang-gang Cockatoo were also considered in relation to their recent listing (2 March 2022) as Endangered under the EPBC Act.

Booroolong Frog

Surveys for Booroolong Frog followed the recommended survey guidelines outlined in 'NSW Survey Guide for Threatened Frogs: A guide for the survey of threatened frogs and their habitats for the Biodiversity Assessment Method' (DPIE, 2020a). Nocturnal spotlighting surveys, which included both

aural and visual surveying, were conducted over four nights in December 2021, fulfilling the survey requirements for the species. Spotlights were used to detect eyeshine and any frog calls were also recorded. While targeting Booroolong Frog, all frog species encountered were recorded.

Microbats

Surveys for threatened microbats included inspecting manmade structures within the subject land with potential microbat roosting habitat consistent with the methodology outlined in Section 5.3.2 of the BDAR (Appendix D of the REF). Two passive Anabat Swift recorders were also installed for two weeks in December 2021 at culverts identified as having or likely to have bats roosting. Active bat monitoring was also carried out by ecologists. Calls frequencies were identified with the use of the 'Bat calls of NSW - region-based guide to the echolocation calls of Microchiropteran bats' (DEC, 2004).

Platypus

Targeted surveys for Platypus included watch surveys and habitat assessments. Platypus watch surveys involved quietly observing the water for Platypus activity for one hour from dusk from the river edge. A total of nine platypus watches were conducted at eight locations at dusk across five nights. Platypus habitat assessments were conducted to assess likelihood of burrow occurrence and were accompanied by assessment of the banks within about 800 metres up and downstream of the proposed bridge at River Lett. To supplement the active searches, two remote cameras were installed on the banks of the River Lett from 23 December 2021 to 1 January 2022 to detect activity of Platypus within the subject land.

5.1.2 Description of existing environment

Flora

Vegetation types

One vegetation zone was established for PCT 1330 (moderate) following the additional plot sampling, bringing the total number of vegetation zones on the subject land to 13. The updated vegetation zones and vegetation integrity scores (as determined using BAMC) for each PCT are listed in Table 2-3 of the Addendum BDAR (Appendix B of this submissions report).

Section 4.4 of the BDAR (Appendix D of the REF) identified two threatened ecological communities (TECs) as occurring within the subject land, based on the associations listed with PCT 1103 in the BioNet Vegetation Database. One patch of vegetation north-west of the highway crossing at River Lett was reclassified from PCT 732 (moderate) to PCT 1103 (good) following analysis of plot monitoring results paired with site observations on the dominance of *Eucalyptus melliodora* (Yellow Box). Where Yellow Boxis not the dominant or co-dominant canopy species in occurrences of PCT 1103, the Tableland Basalt Forest TEC is present. The total area of Tableland Basalt Forest on the subject land has increased to 19.02 hectares.

One patch of native vegetation located centrally within the subject land, north-west of the Jenolan Caves Road and Great Western Highway junction, was reclassified from PCT 731 (moderate) to PCT 1330. This PCT is listed as associated with the TEC White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland, listed as Endangered under the BC Act. The total area of this TEC on the subject land has increased to 9.5 hectares.

To determine whether the patch of PCT 1330 within the subject land meets the criteria for the EPBC Act listed TEC, a comparison of plot data (Q33) with the flowchart in the EPBC Act policy statement was carried out. Based on the analysis of plot data and field observations, 0.30 hectares of PCT 1330

qualifies as White Box - Yellow Box - Blakely's Red Gum Grassy Woodlands and Derived Native Grasslands as defined under the EPBC Act.

Further information regarding presence of TECs is detailed in Section 2.2.3 and Figure 2-1 of the Addendum BDAR (Appendix B of this submissions report).

Threatened flora species

No threatened flora species were detected within the subject land during targeted surveys.

As noted above, the identification of PCT 1330 on the subject land triggered the need to conduct targeted surveys for the candidate threatened flora species *Persoonia glaucescens* (Mittagong Geebung) which was not detected during the targeted surveys.

Fauna

Threatened fauna species

Gang-gang Cockatoo

Gang-gang Cockatoos are listed as Vulnerable under the BC Act and are a dual credit species, with breeding habitat associated with species credits. Gang-gang Cockatoos were recorded flying overhead in the subject land near the Jenolan Caves Road intersection, as well as feeding in trees in Hartley Nature Reserve outside the subject land, in December 2021. No signs of breeding activities were observed within the subject land. Gang-gang Cockatoos were mostly observed in small flocks of five to six birds.

Booroolong Frog

The Booroolong Frog is listed as endangered under the BC Act and EPBC Act. Booroolong Frogs were not detected at the site during targeted spotlighting surveys, visually or aurally.

Frog activity was high during surveys on two nights in December 2021, with five other frog species identified including Common Eastern Froglet (*Crinia signifera*), Eastern Banjo Frog (*Limnodynastes dumerilii*) Spotted Marsh Frog (*Limnodynastes tasmaniensis*), Peron's Tree Frog (*Litoria peronii*) and Green Stream Frog (*Litoria phyllochroa*).

Microbats

Fifteen species of microbats were detected on the Anabat Swift detectors. This included three threatened species, Large Bent-winged Bat (*Miniopterus orianae oceanensis*), Large-eared Pied Bat (*Chalinolobus dwyeri*) and Eastern False Pipistrelle (*Falsistrellus tasmaniensis*) (Figure 3-2 in Appendix B of this submissions report). The Greater Broad-nosed Bat (*Scoteanax rueppellii*), listed as Vulnerable under the BC Act was recorded in the River Lett under the main highway bridge using active monitoring devices. Three individual bats of two species were observed roosting in Culvert 3. Two are likely *Nyctophilus* sp. and one unknown species.

Based on the large number of passes recorded, Large Bent-winged Bat are almost certainly roosting at Culvert 2 (221 passes) and may potentially be roosting at Culvert 3 (18 passes). Passes of Large-eared Pied Bat indicate the species could be roosting and/or breeding at Culvers 2, however there is a much lower potentially for roosting at Culvert 3. While Eastern False Pipistrelle was recorded, they are known to roost in tree hollows and therefore are unlikely using the culvert structures for this purpose.

Platypus

The Platypus is known to inhabit the River Lett within the vicinity of the subject land. Platypus were observed at two sites on the River Lett in Hartley during targeted dusk surveys. Results of the

Platypus habitat assessment identified 31.2 per cent of the River Lett within the subject land as high quality, 43.7 per cent as medium quality and 25 per cent as low quality potential habitat (Figure 3-5 in Appendix B of this submissions report). Both remote cameras deployed failed to detect any Platypus activity on the River Lett within the subject land.

5.1.3 Potential impacts

Construction

Removal of native vegetation

The vegetation clearing required as a result of the proposal is summarised in Table 5-1. The total area of native vegetation to be cleared for the proposal is 75.09 hectares – a decrease of 0.1 hectares from 75.19 hectares assessed in the BDAR. The 75.09 hectares of native vegetation to be cleared for the proposal includes 26.36 hectares of vegetation that meets the criteria for a TEC under the BC Act and 3.90 hectares under the EPBC Act, as summarised in Table 5-1 and Table 5-2.

Impacts to threatened flora

No individuals of threatened flora species assessed as having a moderate or higher likelihood of occurrence were detected during targeted surveys. Subsequently there will be no direct impacts to threatened flora species from the proposal. There is however the potential for threatened flora species to exist within the seed bank on the subject land. Pre-clearing surveys would be carried out to check for threatened flora species and an unexpected finds procedure would be implemented, as described in Safeguard BI01, BI04 and BI07 in Section 6.2 of this submissions report.

Impacts to threatened fauna

Gang-gang cockatoo

The Gang-gang Cockatoo has been assumed to use the subject land for dispersal and foraging habitat as per the BDAR (Appendix D of the REF), and impacts of the proposal have been assessed in Section 8.1 of the BDAR. Results of the current surveys support the assessment that the area is used as foraging habitat, however does not suggest breeding is occurring within the subject land nor that the proposal will significantly impact breeding habitat for the species in the area.

Multiple observations of the species around the River Lett in Little Hartley may indicate that the species breeds in suitable tree hollows in the surrounding areas. The observation of multiple adults feeding in the River Oak (*Casuarina cunninghamiana*), along the river could suggest that this tree species is an important foraging resource.

The field surveys did not detect any Gang-gang Cockatoo tree hollow nests. However, a reduction of tree hollows in the area is likely to impact on all hollow nesting species in the project area which includes Gang-gang Cockatoo. As per Safeguard BI10 in Section 6.32 of this submissions report, habitat will be replaced or re-instated in accordance with relevant guidelines, including the use of modified limbs as a preference to be used for artificial hollows.

Site selection has been carried out to minimise impacts by the proposal to native vegetation and biodiversity values within the locality, which is likely to include the habitat of this species. Residual impacts to foraging habitat of Gang-gang Cockatoos, which may constitute critical habitat, were found to equate to about 75 hectares. These impacts will be offset under the NSW Biodiversity Offset Scheme (BOS) through the purchase of ecosystem credits. EPBC Act offsetting obligations are able to be delivered through the BOS due to an existing bilateral agreement and are therefore being met.

Booroolong Frog

Surveys in the River Lett failed to detect any Booroolong Frogs. While the species has been recorded in the wider area historically (more than 20 years ago), it is possible that the site has changed significantly since these records. Substantial weed growth along the banks of the River Lett was observed, which has been associated with major declines in the Booroolong Frog populations (Hansen and Crosby, 2016). The subject land also contains dense tree cover which has been known to be unsuitable for Booroolong Frog, instead preferring open areas exposed to extended periods of direct sunlight which aid in their thermoregulation requirements (Hunter and Smith, 2013).

While Booroolong Frogs were not found in the subject land, it is possible that populations exist further downstream. There is a possibility that the site may contain the pathogen Chytrid Fungus, which has led to worldwide decline of amphibians. To ensure these populations are not impacted, construction activities should use hygiene measures to wash down vehicles, equipment and footwear when entering the riparian zone. Furthermore, the introduction of foreign soil and water should also be avoided to prevent the spread of Chytrid Fungus. These measures are outlined in Safeguard BI36.

Large Bent-winged Bat

The BDAR identified potential impacts to the Large Bent-winged Bat as a result of noise and vibration, human disturbance and potential culvert extension works at Culvert 3. Culvert extension works are no longer required and direct impacts to the species roosting habitat would not occur. Survey results suggests the species is roosting in Culvert 2 during all times of the year, and if roosting in Culvert 3, only in small numbers. Indirect impacts to the species could occur at Culvert 3 and are likely at Culvert 2 given the high chance of a roost. Impacts to the species are otherwise consistent with those assessed in the BDAR.

Large-eared Pied Bat

The subject land was found to contain potential breeding habitat for the Large-eared Pied Bat in Culverts 2 and 3. Breeding has not been confirmed at the culverts and targeted surveys would be carried out to confirm presence of breeding bats during the next breeding season. Should breeding bats occur, indirect impacts could occur at the culverts from noise and vibration and increased disturbance from human activity, as assessed in Section 8.1.5 of the BDAR (Appendix D of the REF).

As per Safeguard BI37 in Section 6.2 of this submissions report, targeted survey will be carried out during the breeding season prior to construction. If Large-eared Pied Bat is found to be breeding, construction works near both culverts should be scheduled to avoid the breeding season (November to January, inclusive) and hence avoid impacts to breeding individuals if present.

A species polygon was established for this species in the BDAR to include all habitat on the subject land (aligned with PCTs listed within the Threatened Biodiversity Data Collection) that is within two kilometres of caves, scarps, cliffs, rock overhangs, culverts and disused mines (potential breeding habitat). The species polygon has been amended to include all habitat within two kilometres of the culverts in addition to areas previously identified (Figure 3-5 of Appendix B of this submissions report).

Eastern False Pipistrelle and Greater Broad-nosed Bat

Impacts to the Eastern False Pipistrelle and Greater Broad-nosed Bat are possible from indirect noise and vibration during construction at either the culverts or River Lett bridge. No direct impacts to these species would occur during construction and indirect impacts are largely consistent with those described in the BDAR. Safeguards measures proposed in the REF and listed in Section 6.2 of this submissions report are sufficient to address potential impacts.

Impacts to Platypus

Platypus have the potential to be indirectly impacted by a reduction in water quality from earthworks in the vicinity of River Lett. Increasing water turbidity and spills would have adverse impacts on forging habitat quality and food sources including aquatic invertebrates. Erosion and sedimentation control measures and spill management measures are outlined in Section 6.2 of this submissions report to manage these potential impacts.

Direct impacts to Platypus burrows are possible from construction of drainage outlets along the River Lett and the River Lett bridge construction. Burrow destruction can potentially cause death to individuals with or without young. Bridge construction would result in direct removal of vegetation and soil along riverbanks. The bridge would be constructed in an area mapped as low potential habitat for Platypus and as such, impacts to burrows are unlikely. Compaction by heavy vehicles/machinery and damage to burrows from disturbance of bank vegetation could impact burrow stability.

As per Safeguard BI38 in Section 6.2 of this submissions report, prior to construction, thorough searches for platypus burrows would be conducted by a suitably experienced ecologist to confirm the location of any burrows within the construction footprint and determine if any of these burrows are breeding burrows. If found to be present, the following mitigation measures would be considered:

- Locating drainage channels to avoid areas of medium and high quality Platypus habitat
- Avoidance of earth works for bridge construction in the breeding season (October to March) would further reduce the potential to impact the species
- A no-go zone should be established on the River Lett, within retained habitat to minimise potential impacts.

Operation

Potential indirect impacts to platypus may arise during from noise and artificial lighting, shading, litter accumulations in River Lett and hydrological alterations to the River Lett. Shading impacts would be over a relatively small area and hydrological changes are expected to be minor as stated in Section 6.1.3 of the BDAR (Appendix D of the REF).

Table 5-1: Direct impacts to native vegetation

Plant community type (PCT)	Vegetation zone	Area within subject land (ha) – BDAR	Area within subject land (ha) – Current	Area within exclusion zones (ha)	Area to be impacted (ha)
Bathurst Subregion / South Eastern Highlands Bioregion					
River Oak forest and woodland wetland of the NSW South Western Slopes and South Eastern Highlands Bioregion (85)	85 (moderate)	3.95	3.95	0	3.95
	85 (disturbed)	0.35	0.35	0	0.35
Broad-leaved Peppermint – Ribbon Gum grassy open forest in the north east of the South Eastern Highlands Bioregion (732)	732 (moderate)	6.42	4.98	0	4.98
Sydney Peppermint – Silvertop Ash heathy open forest on sandstone ridges of the upper Blue Mountains; Sydney Basin Bioregion (963)*	963 (good)	2.34	1.92	1.04	0.88
Ribbon Gum – Yellow Box grassy woodland on undulating terrain of the eastern tablelands; South Eastern Highlands Bioregion (1103)	1103 (disturbed)	1.85	1.84	0.14	1.7
	1103 (good)	11.62	13.04	0.90	12.14
	1103 (low-moderate)	4.79	4.79	0	4.79
	1103 (moderate)	6.94	7.57	0.74	6.83
Burragorang subregion / Sydney Basin Bioregion					
¬Broad-leaved Peppermint - Red Stringybark grassy open forest on undulating hills, South Eastern Highlands Bioregion (731)	731 (good)	12.44	12.44	0	12.44
	731 (moderate)	14.61	12.09	0	12.09
	731 (variant – good)	3.08	3.08	0	3.08
Silvertop Ash - Narrow-leaved Peppermint open forest on ridges of the eastern tableland, South Eastern Highlands Bioregion and South East Corner Bioregion (1155)	1155 (moderate)	10.24	10.45	0.49	9.96

Plant community type (PCT)	Vegetation zone	Area within subject land (ha) – BDAR	Area within subject land (ha) – Current	Area within exclusion zones (ha)	Area to be impacted (ha)
Yellow Box – Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion 1330)	1330 (moderate)	0	1.90	0	1.90
Total		**78.40**	**3.31**		**75.09**

Table 5-2: Direct impacts to threatened ecological communities

Threatened ecological community (TEC)	Vegetation zone	Area within subject land (ha)	Area within exclusion zones (ha)	Area to be impacted (ha)
BC Act listed communities				
Tableland Basalt Forest in the Sydney Basin and South Eastern Highlands Bioregion (Endangered)	1103 (good)	8.04	0	8.04
	1103 (moderate)	6.31	0	6.31
	1103 (low-moderate)	3.97	0	3.97
	1103 (disturbed)	1.32	0	1.32
	Total	**19.64**	**0**	**19.64**
White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions (Critically Endangered)	1330 (moderate)	1.90	0	1.90
	1103 (good)	5.00	0.90	4.10
	1103 (moderate)	1.26	0.74	0.52
	1103 (low-moderate)	0.82	0	0.82
	1103 (disturbed)	0.52	0.14	0.38
	Total	**9.5**	**1.78**	**7.72**
EPBC Act listed communities				
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Critically Endangered)	1330 (moderate)	0.30	0	0.30
	1103 (good)	4.21	0.61	3.60
	Total	**4.51**	**0.61**	**3.90**

Offsetting

Offsetting requirements as a result of the proposal are detailed in Section 6 of the Addendum BDAR (Appendix B of this submissions report).

5.1.4 Revised safeguards and management measures

Potential biodiversity impacts would be managed through the safeguards and management measures identified in Section 6.2 of this submissions report. Several additional safeguards have been included in response to the Addendum BDAR, and are presented in Table 5-2. Where new text is included it is formatted underlined and where text has been removed it is formatted ~~strikethrough~~.

Table 5-2: Revised safeguards and management measures – biodiversity

Impact	No.	Environmental safeguard in REF	Responsibility	Timing	Amended safeguard	Reason for amendment
Removal of native vegetation, threatened species habitat, habitat features and threatened plants	BI02	Native vegetation and habitat removal will be minimised through detailed design.	Contractor Transport project manager	Detailed design	Native vegetation and habitat removal will be minimised through detailed design. This will include further consideration for the placement of ancillary facilities (including drainage and sediment basins) currently positioned in native vegetation and high value areas will be considered during the detailed design stage.	Consolidated with BI03 and BI08.
Removal of native vegetation, threatened species habitat, habitat features and threatened plants	BI03	Further consideration for the placement of ancillary facilities (including drainage and sediment basins) currently positioned in native vegetation and high value areas will be considered during the detailed design stage.	Contractor Transport project manager	Detailed design	~~Further consideration for the placement of ancillary facilities (including drainage and sediment basins) currently positioned in native vegetation and high value areas will be considered during the detailed design stage.~~	Consolidated with BI02 due to same intent.
Removal of native vegetation, threatened species habitat, habitat features and threatened plants	BI08	Habitat removal will be minimised through detailed design.	Contractor	Construction	~~Habitat removal will be minimised through detailed design.~~	Consolidated with BI02 due to same intent.
Removal of native vegetation,	BI11	Vegetation removal will be minimised around mapped Purple Copper Butterfly habitat.	Contractor	Construction	~~Vegetation removal will be minimised around mapped Purple Copper Butterfly habitat.~~	Consolidated with BI12 due to same intent.

Impact	No.	Environmental safeguard in REF	Responsibility	Timing	Amended safeguard	Reason for amendment
threatened species habitat, habitat features and threatened plants						
Removal of native vegetation, threatened species habitat, habitat features and threatened plants	BI12	A Purple Copper Butterfly management plan will be developed within the Flora and Fauna Management Sub-plan which will include measures to minimise impacts to the species including consideration of construction activity timing/scheduling to minimise mortality in areas of mapped habitat and a monitoring strategy to detect efficacy of management measures.	Contractor Transport project manager	Construction	A Purple Copper Butterfly management plan will be developed within the Flora and Fauna Management Sub-plan which will include measures to minimise impacts to the species including minimising vegetation removal around mapped habitat, consideration of construction activity timing/scheduling to minimise mortality in areas of mapped habitat and a monitoring strategy to detect efficacy of management measures.	Wording from BI11 added.
Aquatic impacts	BI16	A Construction Soil and Water Management Plan (CSWMP) would be developed as a subplan to the CEMP and will outline measures to manage water quality impacts associated with construction work.	Contractor Transport project manager	Construction	~~A Construction Soil and Water Management Plan (CSWMP) would be developed as a subplan to the CEMP and will outline measures to manage water quality impacts associated with construction work.~~	Removed as repeat of SW01.
Aquatic impacts	BI17	A surface water quality monitoring program will be developed in accordance with the *Guidelines for Construction Water Quality Monitoring* (RTA,	Contractor Transport project manager	Construction Operation	~~A surface water quality monitoring program will be developed in accordance with the *Guidelines for Construction Water Quality Monitoring* (RTA,~~	Removed as repeat of SW06.

Impact	No.	Environmental safeguard in REF	Responsibility	Timing	Amended safeguard	Reason for amendment
		2003) as part of the Soil and Water management Sub-plan of the CEMP. The program will monitor surface water prior to construction, during construction and during operation.			~~2003) as part of the Soil and Water management Sub-plan of the CEMP. The program will monitor surface water prior to construction, during construction and during operation.~~	
Groundwater dependent ecosystems	BI18	Interruptions to water flows associated with groundwater dependent ecosystems will be minimised through detailed design.	Contractor	Detailed design	~~Interruptions to water flows associated with groundwater dependent ecosystems will be minimised through detailed design.~~	Removed as no impact to groundwater dependent ecosystems expected.
Changes to hydrology	BI19	Changes to existing surface water flows will be minimised through detailed design.	Contractor	Detailed design	~~Changes to existing surface water flows will be minimised through detailed design.~~	Consolidated with SW01.
Fragmentation of identified habitat corridors	BI20	Connectivity measures will be implemented in accordance with the *Wildlife Connectivity Guidelines for Road Projects* (RTA, 2011). This will include retrofitting culverts with fauna friendly design features suitable for target species.	Contractor Transport project manager	Construction Operation	Connectivity measures will be implemented in accordance with the *Wildlife Connectivity Guidelines for Road Projects* (RTA, 2011). This will include retrofitting culverts with fauna friendly design features suitable for target species. Any connectivity measures implemented will be installed under the supervision of an experienced ecologist and maintained during proposal operation.	Wording from BI21 added.

Impact	No.	Environmental safeguard in REF	Responsibility	Timing	Amended safeguard	Reason for amendment
Fragmentation of identified habitat corridors	BI21	Any connectivity measures implemented will be installed under the supervision of an experienced ecologist and maintained during proposal operation.	Transport project manager	Operation	~~Any connectivity measures implemented will be installed under the supervision of an experienced ecologist and maintained during proposal operation.~~	Consolidated with BI20 due to same intent.
Indirect impacts on native vegetation and habitat	BI24	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).	Contractor	Construction	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). A supervising officer will ensure clearing and fencing contractors stay within the approved boundary.	Wording amended to be clearer.
Invasion and spread of pests	BI26	Pest species will be managed within the construction footprint.	Contractor Transport project manager	Construction	~~Pest species will be managed within the construction footprint.~~	Removed as proposal is not expected to alter existing populations of pest species within the footprint.
Noise, light and vibration	BI29	Permanent shading and artificial light impacts will be minimised through detailed design.	Contractor	Detailed design Construction	Detailed design will look at ways to minimise impacts of permanent shading and artificial light impacts ~~will be minimised through detailed design~~ on fauna habitat, particularly culverts with known microbat populations	Wording amended to be clearer.

Impact	No.	Environmental safeguard in REF	Responsibility	Timing	Amended safeguard	Reason for amendment
Impacts to habitat in human made structures	BI32	Permanent roost habitat for cave-dwelling microbats should be considered for inclusion in the design of new bridges and culvert structures. This may include pre-casting roosting chambers on the underside of bridges or in the roof of culverts, and/or retrofitting/modifying standard structures to make them more suitable for microbats i.e. leaving grab holes and section joins unsealed, scabbling of concrete surfaces to make structures more suitable, particularly in recesses and potential roosting sites.	Contractor Transport project manager	Detailed design Construction	Permanent roost habitat for cave-dwelling microbats ~~should~~is to be ~~considered for inclusion~~ included in the design of new bridges and culvert structures. This may include pre-casting roosting chambers on the underside of bridges or in the roof of culverts, and/or retrofitting/modifying standard structures to make them more suitable for microbats i.e. leaving grab holes and section joins unsealed, scabbling of concrete surfaces to make structures more suitable, particularly in recesses and potential roosting sites.	Wording amended to be clearer.
Impacts to habitat in human made structures	BI33	Access to Culvert 2 and 3 would be restricted during construction to minimise impacts to roosting microbats. If access to either culvert is required, consultation with an ecologist would be carried out and/or an ecologist would supervise activities/access.	Contractor	Construction	Access to Culvert 2 and 3 ~~would~~will be restricted during construction to minimise impacts to roosting microbats. If access to either culvert is required, consultation with an ecologist would be carried out and/or an ecologist would supervise activities/access.	Wording amended to be clearer.
Vehicle strike	BI34	Fauna fencing would be installed at targeted locations along the highway to minimise vehicle strike where reasonable and feasible. Fauna fencing would be	Contractor/Transport project manager	Detailed design Construction	Fauna fencing ~~would~~will be installed at targeted locations along the highway to minimise vehicle strike where reasonable and feasible. Fauna fencing	Wording amended to be clearer.

Impact	No.	Environmental safeguard in REF	Responsibility	Timing	Amended safeguard	Reason for amendment
		designed to minimise impacts to threatened fauna species and species subject to vehicle strike. Locations selected would consider connectivity requirements of fauna and proposed structures. A monitoring strategy would be developed to detect efficacy of fauna fencing and maintenance requirements would be detailed as part of the Flora and Fauna Management Sub-plan of the CEMP.		Operation	would be designed to minimise impacts to threatened fauna species and species subject to vehicle strike. Locations selected would consider connectivity requirements of fauna and proposed structures. Early installation of fauna fencing will be considered to minimise impacts to threatened fauna species during construction. A monitoring strategy would be developed to detect efficacy of fauna fencing and maintenance requirements would be detailed as part of the Flora and Fauna Management Sub-plan of the CEMP.	
Loss of hollow bearing trees	BI35		Transport	Construction	Artificial Hollow construction would include hollows suitable for Gang-gang Cockatoos.	New measure
Introduction of Chytrid Fungus	BI36		Contractor	Construction	Hygiene measures to prevent the spread of chytrid would be implemented in accordance with Hygiene guidelines Protocols to protect priority biodiversity areas in NSW from Phytophthora cinnamomi, myrtle rust, amphibian chytrid fungus and invasive plants (DPIE, 2020b).	New measure

Impact	No.	Environmental safeguard in REF	Responsibility	Timing	Amended safeguard	Reason for amendment
Indirect impacts to *C. dwyeri*	BI37		Contractor Transport project manager	Prior to construction	Targeted survey will be carried out during breeding season for *C. dwyeri* prior to construction. If found to be breeding at culvert 2 and 3, appropriate management measures would be implemented, such as scheduling works outside the November to January during breeding season.	New measure
Loss of individuals from habitat removal in unassessed areas	BI38		Contractor Transport project manager	Prior to construction	Thorough searches for platypus burrows would be conducted by a suitably experienced ecologist prior to construction to confirm the location of any burrows within the construction footprint and determine if any of these burrows are breeding burrows. Based on the findings of these surveys, suitable management measures would be developed. These may include: • Locating drainage channels to avoid areas of medium and high quality Platypus habitat • Establishing a no-go zone at retained areas of the River Lett banks during construction • Restricting earth works for bridge construction to outside	New measure

Impact	No.	Environmental safeguard in REF	Responsibility	Timing	Amended safeguard	Reason for amendment
					the Platypus breeding season (October to March).	
Loss of individuals from habitat removal in unassessed areas	BI39		Transport	Prior to construction	Following acquisition of the following properties targeted surveys for Purple Copper Butterfly in areas of suitable habitat should be conducted: • Lot 10 DP1134053 'Fernhill' 3109 Great Western Highway, South Bowenfels NSW 2790 • Lot 154 DP1122453 "Misty View' 3055 Great Western Highway, Hartley NSW 2790 Surveys should be conducted during detectable periods (DPIE (EES), 2021a).	New measure

5.2 Non-Aboriginal heritage

5.2.1 Methodology

Additional non-Aboriginal heritage assessment has been carried out and an addendum to the Great Western Highway Upgrade: Little Hartley to Lithgow (West Section) Technical working paper – Non-Aboriginal heritage, October 2021 (JAJV, 2021) has been prepared. The methodology was conducted in accordance with the Heritage NSW guidelines, the Australia International Council on Monuments and Sites (ICOMOS) Charter for Places of Cultural Significance (Burra Charter), and the Transport Heritage Guidelines.

The additional assessment included a field survey of heritage items and potential heritage items that were previously not accessed, including:

- Lyndoch Orchard (LEP I109) and adjacent apple trees to south of Great Western Highway
- Road culvert and retaining wall at Emoh (LEP A027)
- A series of water culverts along the Great Western Highway.

The potential heritage items had their significance assessed and for heritage items with significance, an impact assessment and identification of mitigation measures was carried out.

5.2.2 Description of existing environment

The non-Aboriginal cultural historical background of the assessment area is consistent with that described in Section 6.5.2 of the REF.

5.2.3 Summary of additional study

Lyndoch Orchard (LEP I019) in Hartley was unable to be surveyed in 2021 due to access restrictions. The field survey carried out in January 2022 was able to access the following properties to determine their association with the orchard and if there were any remnant orchard trees remaining in situ (refer to Figure 3-1 of Appendix C of this submissions report):

- 2464-2468 Great Western Highway, Hartley NSW 2790 (Lot 1 DP1192566)
- 2430 Great Western Highway, Hartley NSW 2790 (Lot 72 DP751644)
- Great Western Highway, Hartley NSW 2790 (Lot 13 DP1192566)
- 2464 Great Western Highway, Hartley NSW 2790 (Lot 12 DP1192566).

The following road culverts were inspected as part of the field survey (refer to Figure 3-3 of Appendix C of this submissions report):

- Road culvert and retaining wall located at 3432 Great Western Highway, South Bowenfels, NSW 2790 (Lot 1 DP 798073) – local heritage item 'Road culvert and sustaining wall at Emoh' LEP A027
- Road culvert located at 3449 Great Western Hwy, South Bowenfels 2790 (Lot 1 DP68390) - within the curtilage of the locally heritage listed item 'Umera' I052
- Road culvert located on the western side of the Great Western Highway near Mudgee Street, South Bowenfels (comprising Lot 9 Section 3 DP758809, Lot 3 DP580773)

- Road culverts located at 5 Magpie Hollow Road, South Bowenfels on the western side of the Great Western Highway (Lot 3 DP1229039, Lot 3 DP580773)
- Road culverts located at 3546 Great Western Highway, South Bowenfels (Lot 21 DP810179)
- Road culvert located at 3462 Great Western Highway, South Bowenfels (Lot 1 DP586228).

5.2.4 Potential impacts

A summary of the outcomes of the additional assessment of the heritage items and potential heritage items is provided below. Further detail is provided in the Addendum Non-Aboriginal Heritage Report (Appendix C of this submissions report).

Survey confirmed that there are additional significant fruit trees outside the LEP listing boundary for Lyndoch Orchard, and their removal would be a major direct (physical) impact to the Lyndoch Orchard heritage item. The remnant orchard trees should be examined by a qualified arborist and assessed for significance and horticultural value. Any rare, old, or otherwise significant examples or varieties should have potential for propagation or preservation considered prior to proceeding with any future works.

Should removal of extant significant trees be required (as per safeguard NH05 in Section 6.2 of this submissions report) an archival recording of the heritage item should be carried out in accordance with the guidelines Photographic recording of Heritage Items Using Film or Digital Capture (Heritage Council of NSW 2006). If access restrictions persist additional digital capture methods such as drone footage should be explored for inclusion in the archival recording. The required approvals as set out under Section 8 in Appendix H of the REF remained unchanged.

Most of the previously unassessed road culverts were found to be modern structures with no heritage significance, with the possible exception of one. The road culvert located on the western side of the Great Western Highway near Mudgee Street, South Bowenfels (Lot 9 Section 3 DP758809, Lot 3 DP580773), may have heritage significance given its location beneath the former highway alignment. However, this was not possible to confirm due to access and visibility restrictions. Once works have commenced the existing vegetation that is currently impeding access to or site of the downhill/downstream side of the culvert should be cleared sufficiently to allow for a brief survey and reassessment of this element in order to determine appropriate management.

In addition, an element of potential archaeological potential was also identified during the site inspection. A small area of worked stone was identified at 3462 Great Western Highway, South Bowenfels which may relate to an earlier structure or use of the use. As such, should any works be proposed that will disturb the potential item, it should be managed as per safeguard NH16 in Section 6.2 of this submissions report for an archaeological impact comprising a ground disturbance in an area of moderate archaeological potential including test excavation under a s140 permit.

Conclusions

As an outcome of the field survey and additional assessment, the overall impact to the heritage significance of each known heritage item as a result of the proposal has not changed from the original (main report) (Appendix H of the REF) as follows:

Major impact:

- Lyndoch Orchard (LEP I019)

Minor impact:

- Road culvert and sustaining wall at Emoh (LEP A027)

Negligible impact:

- Umera (LEP I052)

Overall, the additional assessment in this addendum report has not altered the overall level of impact on non-Aboriginal (historical) heritage as a result of the proposal. The proposal would still have a major impact on four heritage items, a moderate impact to four, and a negligible or minor impact to 23 heritage items.

5.2.5 Revised safeguards and management measures

Potential impacts to non-Aboriginal heritage would be managed through the safeguards identified in the REF. Several of the safeguards have been revised or updated in response to the Addendum Non-Aboriginal heritage report, and are presented in Table 5-3. Where new text is included it is formatted underlined and where text has been removed it is formatted ~~strikethrough~~.

Table 5-3: Revised safeguards and management measures – non-Aboriginal heritage

Impact	No.	Environmental safeguard in REF	Responsibility	Timing	Amended safeguard	Reason for amendment
Direct impact to heritage fabric with unknown impacts	NH08	Structural assessment by a heritage structural engineer in order to determine the structural capability of the causeway, the probable impacts from the road construction and required compaction, and any additional management or mitigation measures at Billesdene Grange (LEP I023). Archaeological investigation of the area of impact should be completed in order to fully understand the structure and enable a comprehensive archival recording to be produced.	Contractor	Prior to construction	~~Structural assessment by a heritage structural engineer in order to determine the structural capability of the causeway, the probable impacts from the road construction and required compaction, and any additional management or mitigation measures at Billesdene Grange (LEP I023).~~ ~~Archaeological investigation of the area of impact should be completed in order to fully understand the structure and enable a comprehensive archival recording to be produced.~~	Consolidated with NH17 as same intent.
Removal of old, rare, or otherwise significant trees or vegetation	NH09	The remnant orchard trees at Lyndoch Orchard (LEP I019) should be examined by a qualified arborist and assessed for significance and horticultural value. Any rare, old, or otherwise significant examples or varieties should have potential for propagation or preservation considered	Transport project manager	Prior to construction	The remnant orchard trees at Lyndoch Orchard (LEP I019) ~~should~~ will be examined by a qualified arborist and assessed for significance and horticultural value Potential for propagation or preservation of any rare, old, or otherwise significant examples or varieties should ~~have~~be considered ~~potential for propagation or preservation considered~~.	Wording amended for clarity.

Impact	No.	Environmental safeguard in REF	Responsibility	Timing	Amended safeguard	Reason for amendment
Construction (cut or fill) of large road cuttings, embankments or batter slopes	NH10	Attempts should be made, where possible, to blend new batter slopes and embankments with existing topography near: • Rosedale (LEP I024) • Meads Farm (LEP I020) • Old Roman Catholic Cemetery (LEP A015) • Hartley Historic Village (SHR 00992/LEP I043) • Fernhill (SHR 00225/LEP I043) Where the construction requires vegetation removal, embankment design should aim to be of an obtuse angle such that revegetation or new landscape planting is possible	Contractor	Prior to construction Construction	~~Attempts should be made,~~ ~~w~~Where possible, ~~to blend~~new batter slopes and embankments will be blended with existing topography near: • Rosedale (LEP I024) • Meads Farm (LEP I020) • Old Roman Catholic Cemetery (LEP A015) • Hartley Historic Village (SHR 00992/LEP I043) • Fernhill (SHR 00225/LEP I043) Where the construction requires vegetation removal, embankment design should aim to be of an obtuse angle such that revegetation or new landscape planting is possible	Wording amended for clarity.
Removal of visually significant vegetation or areas of existing mature trees	NH11	Wherever possible, areas where vegetation removal is required should attempt to revegetate or landscape the area, with plantings to match the existing landscape (trees replacing trees, grasses replacing grasses) at the following items: • Rosedale (LEP I024) • Billesdene Grange (LEP I023) • Harp of Erin (LEP I028) • Meads Farm (LEP I020)	Contractor	Construction	~~Wherever possible, areas where vegetation removal is required should attempt to r~~Revegetation and landscaping ~~the area, with~~is to consider plantings to match the existing landscape (trees replacing trees, grasses replacing grasses) at the following items: • Rosedale (LEP I024) • Billesdene Grange (LEP I023) • Harp of Erin (LEP I028)	Wording amended for clarity.

Impact	No.	Environmental safeguard in REF	Responsibility	Timing	Amended safeguard	Reason for amendment
		• Old Roman Catholic Cemetery (LEP A015) • Fernhill (SHR 00225/LEP I043) • Old Catholic Cemetery (LEP A029) Landscaping of new works elements should not introduce plantings of tall height species if they did not previously exist in that location. This should aid in maintaining an open landscape where suitable and screening vegetation where it currently exists			• Meads Farm (LEP I020) • Old Roman Catholic Cemetery (LEP A015) • Fernhill (SHR 00225/LEP I043) • Old Catholic Cemetery (LEP A029) Landscaping of new works elements should not introduce plantings of tall height species if they did not previously exist in that location. This should aid in maintaining an open landscape where suitable and screening vegetation where it currently exists	
Ground disturbance in an area of low archaeological potential	NH15	Application for a s139(4) of the Heritage Act exception and test excavation or monitoring of ground disturbance works by an appropriately qualified archaeologist are required at the following locations: • Harp of Erin (LEP I028) • Hartley Historic Village (SHR 00992/LEP I043) • Archaeological potential on unidentified Lot (unlisted) Test excavation prior to, or monitoring during ground	Contractor	Prior to construction	Test excavations will be required at the following sites prior to ground disturbance works and will be carried out in accordance with the requirements of an Excavation Permit Exemption under s139(4) of the Heritage Act: ~~Application for as139(4) of the Heritage Act: exception and test excavation or monitoring of ground disturbance works by an appropriately qualified archaeologist are required at the following locations:~~ • Harp of Erin (LEP I028)	Wording amended for clarity.

Impact	No.	Environmental safeguard in REF	Responsibility	Timing	Amended safeguard	Reason for amendment
		disturbance works in this area under a s139 exception.			• Hartley Historic Village (SHR 00992/LEP I043) • Archaeological potential on unidentified Lot (unlisted) Test excavations and/or monitoring of ground disturbance works will be carried out by appropriately qualified archaeologist. ~~Test excavation prior to, or monitoring during ground disturbance works in this area under a s139 exception.~~	
Ground disturbance in an area of moderate archaeological potential	NH16	Test excavation under a s140 permit or an Exemption to an Excavation Permit under Section 139(4) of the Heritage Act is required at the following sites: • Hartley Historic Site (SHR 00992/LEP I043) • Ben Avon (LEP I053) • Former Bowenfels Lockup (unlisted) • Bowenfels Presbyterian Cemetery (LEP A030) For works within the SHR curtilage, the excavations would require approval under s60 of the Heritage Act instead. Where test excavations are proposed, an archaeological research design and methodology must be	Contractor	Prior to construction	Test excavations will be required prior to ground disturbance at the following sites, and will be carried out in accordance with the requirements of a s140 permit under the Heritage Act: ~~Test excavation under a s140 permit or an Exemption to an Excavation Permit under Section 139(4) of the Heritage Act is required at the following sites~~: ~~• Hartley Historic Site (SHR 00992/LEP I043)~~ • Ben Avon (LEP I053) • Former Bowenfels Lockup (unlisted) • Bowenfels Presbyterian Cemetery (LEP A030)	Wording amended for clarity.

Impact	No.	Environmental safeguard in REF	Responsibility	Timing	Amended safeguard	Reason for amendment
		prepared in accordance with Archaeological Assessments: Archaeological Assessment Guidelines (NSW Heritage Office 1996a).			For works within the SHR curtilage, the excavations would also require approval under s60 of the Heritage Act instead. Where test excavations are proposed, an archaeological research design and methodology ~~must~~ will be prepared in accordance with Archaeological Assessments: Archaeological Assessment Guidelines (NSW Heritage Office 1996a)	
Disturbance of an area of high archaeological potential	NH17	As the causeway at Billesdene Grange (LEP I023) is considered to be an archaeological 'work' it does not trigger the requirement for a s140 permit. Archaeological investigation should be completed under appropriately qualified supervision to expose, investigate and record the causeway fabric. A detailed archival recording of the causeway and Billesdene Grange frontage to the Great Western Highway should be completed prior to works.	Contractor	Prior to construction	~~As the causeway at Billesdene Grange (LEP I023) is considered to be an archaeological 'work' it does not trigger the requirement for a s140 permit~~Archaeological investigation ~~should~~will be completed under appropriately qualified supervision to expose, investigate and record the causeway fabric A detailed archival recording of the causeway and Billesdene Grange (LEP I023) frontage to the Great Western Highway ~~should~~will be completed prior to works. Investigation will include structural assessment by a heritage structural engineer in order to determine the structural	Amended to include wording from NH08.

Impact	No.	Environmental safeguard in REF	Responsibility	Timing	Amended safeguard	Reason for amendment
					capability of the causeway, the probable impacts from the road construction and required compaction, and any required additional management or mitigation measures.	
Disturbance of an area with the potential for human remains	NH18	An archaeological assessment should be completed of the site Archaeological potential on unidentified Lot, including a detailed survey of the lot and area of potential in order to assess the landform and identify any surface features, and remote sensing of an appropriate method. Based on the results of the survey and remote sensing, an archaeological research design should be prepared for management of the site and. It should include further research to try and ascertain the potential identity of the deceased and may subsequently include genealogical research to locate any of their descendants. If the archaeological assessment identifies potential features, complete a test excavation. If the results are inconclusive then the area to be impacted should be monitored during the removal	Contractor	Prior to construction	An ~~archaeological~~assessment ~~should be completed of the site Archaeological~~ of archaeological potential on unidentified Lot is to be completed, including a detailed survey of the lot and area of potential in order to assess the landform and identify any surface features, and remote sensing of an appropriate method. Based on the results of the survey and remote sensing, an archaeological research design should be prepared for management of the site and. It should include further research to try and ascertain the potential identity of the deceased and may subsequently include genealogical research to locate any of their descendants. If the archaeological assessment identifies potential features, complete a test excavation. If the results are inconclusive then the area to be impacted should	Wording amended for clarity.

Impact	No.	Environmental safeguard in REF	Responsibility	Timing	Amended safeguard	Reason for amendment
		of topsoil by an appropriately qualified archaeologist. This work would require a s139 exception and should be completed with the support of a physical anthropologist in case potential human remains are identified.			be monitored during the removal of topsoil by an appropriately qualified archaeologist. This work would require a s139 exception and should be completed with the support of a physical anthropologist in case potential human remains are identified.	
Properties unable to be accessed	NH19	Further assessment in the detailed design phase will be completed at the following locations in order to physically inspect these items and amend the desktop assessment of the items presented in this report: • Billesdene Grange (LEP I023) • House (LEP I021) • Meads Farm (LEP I020) • Lyndoch Orchard (LEP I019) • Archaeological potential on unidentified Lot (unlisted) • Fernhill (SHR 00225/LEP I043) • Emoh (I051) • Umera (LEP I052)	Contractor	Detailed design	Further assessment in the detailed design phase will be completed at the following locations in order to physically inspect these items and amend the desktop assessment of the items presented in this report: • Billesdene Grange (LEP I023) • House (LEP I021) • Meads Farm (LEP I020) • ~~Lyndoch Orchard (LEP I019)~~ • Archaeological potential on unidentified Lot (unlisted) • Fernhill (SHR 00225/LEP I043) • Emoh (I051) • Umera (LEP I052)	Lyndoch orchard removed from this measure as investigation has been carried out since the REF.

5.3 Contamination

This section presents the findings of a Stage 2 Contamination Assessment completed for the proposal. The Stage 1 Contamination Assessment (JAJV, 2021b), included with the REF, identified potential areas of environmental interest (AEI) requiring further investigation to inform the need for mitigation and/or remedial measures. The Stage 2 Contamination Assessment was carried out in accordance with the Sampling, Analysis and Quality Plan (SAQP) (JAJV, 2021a).

5.3.1 Summary of additional study

A Stage 2 Contamination Assessment was carried out to identify whether land within or adjacent to the construction footprint is potentially or known to be contaminated, whether potential/known contamination could impact upon human health or the environment in the context of the proposed construction and operation of the project, and where mitigation or management measures are required to manage identified potential/known contamination. The investigation was carried out in accordance with

- *Contaminated Land Guidelines: Consultants Reporting on Contaminated Land* (NSW EPA, 2020)
- *Guidelines for the NSW Site Auditor Scheme* (3rd edition) (NSW EPA, 2017)
- *Guidelines for the Assessment and Management of Groundwater Contamination, Department of Environment and Conservation* (DEC, 2007)
- *Guidelines on the Duty to Report Contamination under the Contamination Land Management Act 1997* (NSW EPA, 2015)
- Technical Note: Investigation of Service Station Sites (NSW EPA, 2014)
- Schedule B2 of the National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended in 2013) (NEPM) (NEPC, 2013) and the Per- and poly-fluoroalkyl substances (PFAS) National Environmental Management Plan (NEMP) (PFAS NEMP, 2020).

As far as practicable, sampling was carried out in accordance with the SAQP (JAJV, 2021a). A summary of the sample locations and sample types taken are provided in Table 5-4.

Table 5-4: Summary of samples taken

Investigation type	Sample type	Number of locations	Approximate depth of sample (metres below ground level)
Soil	Surface soil sample	27	0.10
	Borehole	5	0.05 to 11
Groundwater	Groundwater well	6	5 to 11

Further detail on sampling procedures, including sampling locations, is provided in Appendix D of this submissions report.

5.3.2 Assessment criteria

Soil

The site assessment criteria (SAC) were set at levels to provide confidence that contaminant concentrations below the SAC will not adversely affect human health or terrestrial/aquatic ecosystems associated with the construction and operation of the proposal. The SAC developed for the Stage 2 Contamination Assessment were derived from the following guidelines:

- *Schedule B1 Guideline on Investigation levels for Soil and Groundwater (NEPC, 2013).*
- *PFAS NEMP – Version 2 (HEPA, 2020)*
- *Environmental Guidelines: Use and disposal of biosolids products. (NSW EPA, 2000).*

The SAC adopted for the Stage 2 Contamination Assessment are presented in Table 5-5.

Table 5-5: Soil assessment criteria adopted for the proposal

Contaminant(s)	Applicable guideline	SAC
PFASs	PFAS NEMP (HEPA, 2020)	Ecological investigation levels (EILs)
Petroleum hydrocarbon and total recoverable hydrocarbon (TRH)	NEPM (NEPC, 2013)	Ecological Screening Levels (ESLs)
Metals/Metalloids, Polycyclic Aromatic Hydrocarbons (PAHs), TRH, Organochlorine Pesticides,	NEPC (2013)	Health Investigation Levels (HILs) recommended for exposure setting 'D' which includes shops, offices, factories and industrial sites
F1, F2 and BTEX (based on sand soil type)	NEPC (2013)	Soil HSLs for vapour intrusion – Commercial/Industrial, sand
Biological (faecal coliforms)	NSW EPA (2020)	*Biosolids Stabilisation Grade A Microbiological Standards* (criteria for thermotolerant coliforms [faecal coliforms] adopted as a conservative trigger value)
Asbestos	(NEPC, 2013)	No detectable asbestos

Groundwater

Two sets of groundwater assessment criteria were used to identify potential contaminant risk from groundwater during construction of the proposal. These were:

- Groundwater Investigation Levels (GILs) – Human Health: For the protection of human health the GILs were derived from the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018)* and the *National Water Quality Management Strategy, Australian Drinking Water Guidelines 6, 2011 - Version 3.5 Updated August 2018 (NMHRC, 2018)* for

recreational use and drinking water were applied (although acknowledged to be overly conservative).

- GILs – Ecosystem Protection: For the protection of the aquatic ecosystems, the most appropriate GILs were considered generally the 95 per cent protection levels for freshwater given in the ANZG (2018) guideline. Where the guideline does not provide these criteria or the guideline considers the 95 per cent protection level is inappropriate, GILs were sourced by using:
    - The 99 per cent protection levels for freshwater ecosystems provided in the ANZG 2018 guidelines (where applicable/available).
    - NEPC (2013) prescribed GILs.
    - Low reliability trigger values provided in the ANZG 2018 and *National Water Quality Management Strategy Paper No. 4 – Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC 2000).*

5.3.3 Sampling results and potential impacts

A summary of the outcomes of the Stage 2 Contamination Assessment is provided below.

Soil

- Five soil samples (BH06, BH07, SS13, SS22, BH15), taken from areas of agricultural land use within the study area, had levels of faecal coliforms above the adopted SAC. The elevated total coliform numbers are likely due to the presence of livestock and other fauna in these areas.
- No other soil sample collected and analysed as part of this investigation reported concentrations of contamination exceeding the adopted SAC.
- No asbestos or asbestos containing material was observed in material excavated from or in the near vicinity of the investigation locations or detected in any soil samples submitted for laboratory testing.
- During the investigation only minor visual signs of potential contamination (for example, bitumen and minor organic/hydrocarbon odours) were observed and primarily related to surface samples adjacent to the road corridor and agriculture at sample sites SS16, SS22, SS27, SS28 and SS29. No contamination at depth was observed.

Groundwater

- Concentrations of zinc exceeded the GILs – Ecosystem protection for zinc at five of the groundwater wells (GW01, GW02, GW03, GW05 and GW07). Concentrations of cadmium, copper and nickel were exceeded at several of the wells sampled.
- Concentrations of formaldehyde and nutrients (total nitrogen) exceeded the GILs – Drinking water at the groundwater well located in the Hartley Cemetery (GW03).
- Groundwater well GW02, located within an agricultural area, reported total coliforms above the adopted GILs for both health and ecosystem protection.
- Groundwater is unlikely to be intersected during construction or operation at four of the five wells installed. However, construction in the vicinity of well GW01 may intersect groundwater seepage containing elevated concentrations of cadmium and zinc which could impact upon aquatic ecosystems in receiving waterways if not managed.

With the exception of well GW01, groundwater in other areas (where investigated) is unlikely to be intersected as part of construction and operations so the impact potential from the elevated contaminant concentrations in groundwater is considered to be low. Construction in the vicinity of

well GW01 may intersect groundwater seepage containing elevated concentrations of cadmium and zinc which could impact upon aquatic ecosystems in receiving waterways if not managed. However, this impact is unlikely as calculated groundwater inflow rates are very low and discharged groundwater would be diluted by surface water (refer to Section 5.1.4 of Technical Working Paper – Groundwater assessment (JAJV, 2021c)). Groundwater impacts are therefore expected to pose a low risk to human health across the site

Conclusions

Overall, based on the results of the Stage 2 Contamination Assessment, the contamination impacts to human health and ecological receptors during construction and operation of the proposal are likely to be low with only specific areas of moderate impact requiring management during construction, which include:

- Groundwater at the former station at Hartley Cemetery (GW01)
- Soil in select agricultural areas across all study areas (BH06, BH07, SS13, SS22 and BH15).

The Stage 2 Contamination Assessment also noted that the potential for contamination related to septic tanks is possible across the proposal and have been assessed as having a moderate potential impact. These impacts should continue to be assessed and managed throughout construction. Measures to mitigate potential impacts are provided below.

5.3.4 Revised safeguards and management measures

Potential impacts from contamination would be managed through the safeguards identified in the REF. Several of the safeguards have been revised or updated in response to the Stage 2 Contamination Assessment, and are presented below. Where new text is included it is formatted underlined and where text has been removed it is formatted ~~strikethrough~~.

Table 5-6: Summary of environmental safeguard and management measures to mitigate potential contamination impacts.

Impact	No.	Environmental safeguard in REF	Responsibility	Timing	Amended safeguard	Reason for amendment
Detailed site investigation	CN01	A Detailed Site Investigation (DSI) is being carried out prior to construction to better understand the nature and extent of contamination in accordance with the NEPM (2013) and other guidelines made or endorsed by the NSW EPA.	Contractor	Prior to construction	~~A Detailed Site Investigation (DSI) is being carried out prior to construction to better understand the nature and extent of contamination in 321ccordance with the NEPM (2013) and other guidelines made or endorsed by the NSW EPA.~~	Removal of safeguard as a Detail Site Investigation (Stage 2 Contamination Assessment) has already been carried out.
Impacts of soil and groundwater contamination	CN02	Where site investigation data confirms that contamination is likely to have a very low, low or moderate impact potential, the site would then be managed in accordance with Construction Environmental Management Framework.	Contractor	Prior to construction and during construction	A Contaminated Land Management Plan (CLMP) will be prepared. The CLMP will include: • Control measures to manage identified areas of elevated total coliforms, including surface soils in the vicinity of BH06, BH07, SS13, SS22 and BH15 containing elevated total coliforms • Control measures to manage potential contamination in agricultural areas from including limiting soil contact, use of correct personal protective equipment and education of contractors	Update of safeguard as assessment has been carried out and areas of contamination confirmed. The updated safeguard requires the preparation of a CLMP to manage specific locations of contamination.

Impact	No.	Environmental safeguard in REF	Responsibility	Timing	Amended safeguard	Reason for amendment
					• Control measures to manage identified elevated cadmium and zinc in groundwater in the vicinity of GW01 and appropriately manage inflows prior to discharge or disposal • Control measures to manage potentially impacted groundwater (where intersected) from septic systems within the Forty Bends to Lithgow section • Management of groundwater encountered during excavation where dewatering is required as outlined in CN06 • Where coal tar is present, material should be managed/disposed of off-site in accordance with the NSW Government (2015) Technical Direction 21: coal tar asphalt handling and disposal procedure • Procedures for unexpected contamination as outlined in CN06A • Requirements for the disposal of contaminated waste in accordance with the POEO Act and the Protection of the	

Impact	No.	Environmental safeguard in REF	Responsibility	Timing	Amended safeguard	Reason for amendment
					Environment Operations (Waste) Regulation 2014. ~~Where site investigation data confirms that contamination is likely to have a very low, low or moderate impact potential, the site would then be managed in accordance with Construction Environmental Management Framework.~~	
Remediation Action Plan	CN03	If identified as required following detailed site investigations, a Remedial Action Plan (RAP) would be developed for identified risk areas within the construction footprint. Each RAP would detail the remediation works required to mitigate risks from contamination throughout and following completion of construction. The RAP would be prepared in accordance with relevant NSW EPA guidelines and where applicable, detail remediation methodologies in accordance with Australian Standards and other relevant government guidelines and codes of practice.	Contractor	Prior to construction	~~If identified as required following detailed site investigations, a Remedial Action Plan (RAP) would be developed for identified risk areas within the construction footprint. Each RAP would detail the remediation works required to mitigate risks from contamination throughout and following completion of construction. The RAP would be prepared in accordance with relevant NSW EPA guidelines and where applicable, detail remediation methodologies in accordance with Australian Standards and other relevant government guidelines and codes of practice.~~	The Stage 2 Contamination Assessment has concluded that a Remedial Action Plan is not required for the proposal.
Site audit statement	CN04	If identified as required following detailed site investigations, an	Contractor	Prior to construction	~~If identified as required following detailed site~~	The Stage 2 Contamination

Impact	No.	Environmental safeguard in REF	Responsibility	Timing	Amended safeguard	Reason for amendment
		accredited Site Auditor would review and approve the RAP and remediation activities and will develop a Site Audit Statement (SAS) and Site Audit Report (SAR) upon completion of remediation			~~investigations, an accredited Site Auditor would review and approve the RAP and remediation activities and will develop a Site Audit Statement (SAS) and Site Audit Report (SAR) upon completion of remediation.~~	Assessment has concluded that a Remedial Action Plan is not required for the proposal and a site audit statement will therefore not be required.
Unexpected finds procedure	CN06	-	Contractor	During construction	An 'unexpected finds' protocol should be implemented as part of the CLMP to plan for and accommodate potential contamination impacts. Contingency measures as part of this procedure should include: • Stop work procedures: a suitably qualified and experienced consultant should then assess whether material is or is not contaminated • Treat suspected contaminated material as actually contaminated material and employ adequate environmental and safety controls • Procedures for managing groundwater inflows, particularly in the vicinity of septic tanks, including	A new safeguard has been included to manage unexpected contamination finds, including the potential for groundwater inflows in the vicinity of sceptic tanks.

Impact	No.	Environmental safeguard in REF	Responsibility	Timing	Amended safeguard	Reason for amendment
					minimising worker exposure, testing and appropriate disposal.	

6. Environmental management

The REF for the Great Western Highway Upgrade Program – Little Hartley to Lithgow (West Section) identified the framework for environmental management, including safeguards and management measures that would be adopted to avoid or reduce environmental impacts (Section 7 of the REF).

After consideration of the issues raised in the public submissions (Section 2 and Section 3), changes to the proposal (Section 4) and further environmental assessment carried out (Section 5), the safeguard and management measures for the proposal (Section 7.2 of the REF) have been revised. Five additional measures have been included, 16 measures have been removed and 63 measures have been modified.

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

6.1 Environmental management plans (or system)

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

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

The CEMP will be prepared prior to construction of the proposal and must be reviewed and certified by the Transport Environment and Sustainability Officer, Western Region, prior to the commencement of any on-site works. The CEMP will be a working document, subject to ongoing change and updated as necessary to respond to specific requirements. The CEMP would be developed in accordance with the specifications set out in:

- QA Specification G36 – Environmental Protection (Management System)
- QA Specification *G38 – Soil and Water Management (Soil and Water Plan)*
- QA Specification *G40 – Clearing and Grubbing*
- QA Specification G10 – Traffic Management.

6.2 Summary of safeguards and management measures

The REF for the Great Western Highway Upgrade Program – Little Hartley to Lithgow (West Section) 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, changes to the proposal and further environmental assessment carried out, the environmental management measures for the proposal (Section 7.2 of the REF) have been revised. Should the proposal proceed, the environmental management measures in Table 6-1 will guide the subsequent phases of the proposal. Additional and/or modified environmental safeguards and management measures to those presented in the REF have been underlined and deleted measures, or parts of measures, have been ~~struck out~~.

Table 6-1: Summary of environmental safeguards and management measures

No.	Impact	Environmental safeguards	Responsibility	Timing
General				
GEN01	General - minimise environmental impacts during construction	A CEMP will be prepared and submitted for review and endorsement of the Transport Environment Manager prior to commencement of the activity. As a minimum, the CEMP will address the following: • any requirements associated with statutory approvals • details of how the proposal will 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. The endorsed CEMP will be implemented during the undertaking of the activity.	Contractor Transport project manager	Prior to construction Detailed design
GEN02	General - notification	All businesses, residential properties and other key stakeholders (eg schools, local councils) affected by the activity will be notified at least five days prior to commencement of the activity.	Contractor Transport project manager	Prior to construction
GEN03	General – environmental awareness	All personnel working on site will receive training to ensure awareness of environment protection requirements to be implemented during the proposal. This will include up-front site induction and regular "toolbox" style briefings. Site-specific training will be provided to personnel engaged in activities or areas of higher risk. These include:	Contractor Transport project manager	Prior to construction Detailed design

No.	Impact	Environmental safeguards	Responsibility	Timing
		• Areas of Aboriginal and non-Aboriginal heritage sensitivity • Threatened species habitat • Adjoining residential areas requiring particular noise management measures • Water quality management • Clearing of vegetation ensuring approved extents of clearing are strictly adhered to.		
Biodiversity				
BI01	Biodiversity	A Flora and Fauna Management Plan will be prepared in accordance with Transport's *Biodiversity Guidelines: Protecting and Managing Biodiversity on Projects* (RMS, 2011) and implemented as part of the CEMP. It will include, but not be limited to: • 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 *Landscape Guideline* (RMS, 2008) • Pre-clearing survey requirements • Procedures for unexpected threatened species finds and fauna handling • Procedures addressing relevant matters specified in the *Policy and guidelines for fish habitat conservation and management* (DPI Fisheries, 2013) • Protocols to manage weeds and pathogens.	Contractor Transport project manager	Detailed design Prior to construction
BI02	Removal of native vegetation, threatened species habitat, habitat features	Native vegetation and habitat removal will be minimised through detailed design. This will include further consideration for the placement of ancillary facilities (including drainage and sediment basins) currently positioned in native vegetation and high value areas will be considered during the detailed design stage.	Contractor Transport project manager	Detailed design

No.	Impact	Environmental safeguards	Responsibility	Timing
	and threatened plants			
~~BI03~~	~~Removal of native vegetation, threatened species habitat, habitat features and threatened plants~~	~~Further consideration for the placement of ancillary facilities (including drainage and sediment basins) currently positioned in native vegetation and high value areas will be considered during the detailed design stage.~~	~~Contractor~~ ~~Transport project manager~~	~~Detailed design~~
BI04	Removal of native vegetation, threatened species habitat, habitat features and threatened plants	Pre-clearing surveys will be carried out in accordance with Guide 1: Pre-clearing process of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011).	Contractor	Construction
BI05	Removal of native vegetation, threatened species habitat, habitat features and threatened plants	Vegetation and habitat removal will be carried out 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).	Contractor	Construction
BI06	Removal of native vegetation, threatened species habitat, habitat features	Native vegetation will be re-established in accordance with Guide 3: Re-establishment of native vegetation of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011).	Contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
	and threatened plants			
BI07	Removal of native vegetation, threatened species habitat, habitat features and threatened plants	The unexpected species find procedure is to be followed under Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) if threatened ecological communities, not assessed in the biodiversity assessment, are identified in the proposal site.	Contractor	Construction
~~BI08~~	~~Removal of native vegetation, threatened species habitat, habitat features and threatened plants~~	~~Habitat removal will be minimised through detailed design.~~	~~Contractor~~	~~Construction~~
BI09	Removal of native vegetation, threatened species habitat, habitat features and threatened plants	Fauna will be managed in accordance with Guide 9: Fauna handling of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011).	Contractor	Construction
BI10	Removal of native vegetation, threatened species habitat, habitat features	Habitat will be replaced or re-instated in accordance with Guide 5: Re-use of woody debris and bushrock and Guide 8: Nest boxes of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011). Modified limbs salvaged from removed vegetation in the subject land would be preferenced over nest boxes for artificial hollow construction.	Contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
	and threatened plants			
~~BI11~~	~~Removal of native vegetation, threatened species habitat, habitat features and threatened plants~~	~~Vegetation removal will be minimised around mapped Purple Copper Butterfly habitat.~~	~~Contractor~~	~~Construction~~
BI12	Removal of native vegetation, threatened species habitat, habitat features and threatened plants	A Purple Copper Butterfly management plan will be developed within the Flora and Fauna Management Sub-plan which will include measures to minimise impacts to the species including minimising vegetation removal around mapped habitat, consideration of construction activity timing/scheduling to minimise mortality in areas of mapped habitat and a monitoring strategy to detect efficacy of management measures.	Contractor Transport project manager	Construction
BI13	Aquatic impacts	Aquatic habitat will be protected in accordance with Guide 10: Aquatic habitats and riparian zones of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) and Section 3.3.2 Standard precautions and mitigation measures of the Policy and guidelines for fish habitat conservation and management Update 2013 (DPI, 2013).	Contractor	Construction
BI14	Aquatic impacts	Creek works and bridges ~~would~~will be designed in accordance with the *Policy and Guidelines for Fish Friendly Waterway Crossings* (DPI, 2003)	Contractor	Construction
BI15	Aquatic impacts	Instream works ~~would~~will be carried out during periods of low flow where possible. Where not possible, any creek diversions would require a permit from DPI (Fisheries).	Contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
~~BI16~~	~~Aquatic impacts~~	~~A Construction Soil and Water Management Plan (CSWMP) would be developed as a subplan to the CEMP and will outline measures to manage water quality impacts associated with construction work.~~	~~Contractor~~ ~~Transport project manager~~	~~Construction~~
~~BI17~~	~~Aquatic impacts~~	~~A surface water quality monitoring program will be developed in accordance with the *Guidelines for Construction Water Quality Monitoring* (RTA, 2003) as part of the Soil and Water management Sub-plan of the CEMP. The program will monitor surface water prior to construction, during construction and during operation.~~	~~Contractor~~ ~~Transport project manager~~	~~Construction~~ ~~Operation~~
~~BI18~~	~~Groundwater dependent ecosystems~~	~~Interruptions to water flows associated with groundwater dependent ecosystems will be minimised through detailed design.~~	~~Contractor~~	~~Detailed design~~
~~BI19~~	~~Changes to hydrology~~	~~Changes to existing surface water flows will be minimised through detailed design.~~	~~Contractor~~	~~Detailed design~~
BI20	Fragmentation of identified habitat corridors	Connectivity measures will be implemented in accordance with the *Wildlife Connectivity Guidelines for Road Projects* (RTA, 2011). This will include retrofitting culverts with fauna friendly design features suitable for target species. Any connectivity measures implemented will be installed under the supervision of an experienced ecologist and maintained during proposal operation.	Contractor Transport project manager	Construction Operation
~~BI21~~	~~Fragmentation of identified habitat corridors~~	~~Any connectivity measures implemented will be installed under the supervision of an experienced ecologist and maintained during proposal operation.~~	~~Transport project manager~~	~~Operation~~
BI22	Fragmentation of identified habitat corridors	Revegetation of unused existing pavement beneath the bridge at Jenolan Caves Road would be investigated as a potential option to increase fauna connectivity in this area. This ~~would~~will need to consider risk of road strike and feasibility of fauna fencing at this intersection.	Contractor	Detailed design

No.	Impact	Environmental safeguards	Responsibility	Timing
BI23	Fragmentation of identified habitat corridors	Riparian zone under the twin bridges at River Lett would be revegetated, where feasible, to ensure habitat connectivity is retained.	Contractor	Detailed design
BI24	Indirect impacts on native vegetation and habitat	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). A supervising officer will ensure clearing and fencing contractors stay within the approved boundary.	Contractor	Construction
BI25	Invasion and spread of weeds	Weed species will be managed in accordance with Guide 6: Weed management of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011).	Contractor	Construction
~~BI26~~	~~Invasion and spread of pests~~	~~Pest species will be managed within the construction footprint.~~	~~Contractor~~	~~Construction~~
BI27	Invasion and spread of pathogens and disease	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	Construction
BI28	Noise, light and vibration	Works in proximity to culvert 2 and 3 ~~would~~will be carried out at night, where possible to minimise impacts to roosting microbats.	Contractor	Construction
BI29	Noise, light and vibration	Detailed design will look at ways to minimise impacts of permanent shading and artificial light impacts ~~will be minimised through detailed design~~ on fauna habitat, particularly culverts with known microbat populations.	Contractor Transport project manager	Detailed design Construction
BI30	Noise, light and vibration	Construction lighting impacts would be minimised as follows: • Lighting would only be used as necessary to conduct construction activities at night. Lights would be turned off when not needed • Adaptive light controls to manage light timing, intensity and colour would be installed	Contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		• Only the object or area intended would be lit where feasible • Lights would be kept close to the ground, directed and shielded to avoid light spill • The lowest intensity lighting appropriate for the task would be used • Use non-reflective, dark-coloured surfaces where possible • Use lights with reduced or filtered blue, violet and ultra-violet wavelengths where possible.		
BI31	Impacts to habitat in human made structures	A Microbat Management Plan ~~would~~ will be prepared as a part of the Fauna and Flora Management Sub-Plan to manage impacts to microbats. It would include pre-clearance checks of culverts, monitoring of microbats during noisy works and stop works procedures.	Contractor	Construction
BI32	Impacts to habitat in human made structures	Permanent roost habitat for cave-dwelling microbats ~~should~~is to be ~~considered for inclusion~~ included in the design of new bridges and culvert structures. This may include pre-casting roosting chambers on the underside of bridges or in the roof of culverts, and/or retrofitting/modifying standard structures to make them more suitable for microbats i.e. leaving grab holes and section joins unsealed, scabbling of concrete surfaces to make structures more suitable, particularly in recesses and potential roosting sites.	Contractor Transport project manager	Detailed design Construction
BI33	Impacts to habitat in human made structures	Access to Culvert 2 and 3 ~~would~~will be restricted during construction to minimise impacts to roosting microbats. If access to either culvert is required, consultation with an ecologist would be carried out and/or an ecologist would supervise activities/access.	Contractor	Construction
BI34	Vehicle strike	Fauna fencing ~~would~~will be installed at targeted locations along the highway to minimise vehicle strike where reasonable and feasible. Fauna fencing would be designed to minimise impacts to threatened fauna species and species subject to vehicle strike. Locations selected would consider connectivity requirements of fauna and proposed structures. Early installation of fauna fencing will be considered to minimise impacts to threatened fauna species during construction.	Contractor Transport project manager	Detailed design Construction Operation

No.	Impact	Environmental safeguards	Responsibility	Timing
		A monitoring strategy would be developed to detect efficacy of fauna fencing and maintenance requirements would be detailed as part of the Flora and Fauna Management Sub-plan of the CEMP.		
BI35	Loss of hollow bearing trees	Artificial Hollow construction would include hollows suitable for Gang-gang Cockatoos.	Contractor	Construction
BI36	Introduction of Chytrid Fungus	Hygiene measures to prevent the spread of chytrid would be implemented in accordance with Hygiene guidelines Protocols to protect priority biodiversity areas in NSW from Phytophthora cinnamomi, myrtle rust, amphibian chytrid fungus and invasive plants (DPIE, 2020b).	Contractor	Construction
BI37	Indirect impacts to *C. dwyeri*	Targeted survey will be carried out during breeding season for *C. dwyeri* prior to construction. If found to be breeding at culvert 2 and 3, appropriate management measures would be implemented, such as scheduling works outside the November to January during breeding season.	Contractor Transport project manager	Prior to construction
BI38	Platypus burrow disturbance	Thorough searches for platypus burrows would be conducted by a suitably experienced ecologist prior to construction to confirm the location of any burrows within the construction footprint and determine if any of these burrows are breeding burrows. Based on the findings of these surveys, suitable management measures would be developed. These may include: • Locating drainage channels to avoid areas of medium and high quality Platypus habitat where reasonable and feasible • Establishing a no-go zone at retained areas of the River Lett banks during construction • Restricting earth works for the bridge over River Lett construction to outside the Platypus breeding season (October to March) where reasonable and feasible.	Contractor Transport project manager	Prior to construction

No.	Impact	Environmental safeguards	Responsibility	Timing
BI39	Loss of individuals from habitat removal in unassessed areas	Following acquisition of the following properties targeted surveys for Purple Copper Butterfly in areas of suitable habitat should be conducted: • Lot 10 DP1134053 'Fernhill' 3109 Great Western Highway, South Bowenfels NSW 2790 • Lot 154 DP1122453 "Misty View' 3055 Great Western Highway, Hartley NSW 2790. Surveys should be conducted during detectable periods (DPIE (EES), 2021a).	Transport project manager	Prior to construction
Traffic and transport				
TT01	Construction traffic	A Traffic Management Plan (TMP) will be prepared for the construction phase of the proposal. This will adhere to Traffic Control at Worksites, Technical Manual, Issue No. 6, Transport, September 2020 and QA Specification G10 Traffic Management (Transport, August 2020). This will include details on: • Measures to maintain access to properties and local roads • Site specific traffic control measures to manage and regulate traffic movement • Requirement and methods to consult and inform the local community of impacts on the local road network • Measures to maintain pedestrian and cyclist access • Access to ancillary sites including entry and exit locations and measures to prevent construction vehicles queuing on public roads • A response plan for any construction road traffic incident • Consideration of other developments which 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.	Contractor	Prior to construction Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
TT02	Construction traffic staging	Traffic management plans ~~would~~will be prepared for the construction area and progressively updated as the works progress. The plans would be prepared and implemented by suitably qualified personnel.	Contractor	Prior to construction Construction
TT03	Construction traffic staging	Schedule partial road closures to maintain two lanes at all times except for blasting periods. Full road closures ~~would~~will be required for short periods of time (about 15 minutes) however this would be conducted at non-peak times.	Contractor	Prior to construction Construction
TT04	Consultation	Carry out consultation with local and regional bus companies prior to and during construction.	Contractor	Prior to construction Construction
TT05	Consultation	Carry out consultation with emergency services prior to and during construction to confirm any diversions during construction and any operational road network changes	Contractor	Prior to construction Construction
TT06	Consultation	Carry out consultation with businesses, property owners and occupiers regarding changes to access arrangements	Contractor	Prior to construction Construction
TT07	Consultation	Carry out consultation with local councils regarding potential impacts to parking during the construction period.	Contractor	Prior to construction Construction
TT08	Operational traffic management	Review incident management plan in the event the highway may be temporarily closed due to scheduled maintenance or accident.	Transport	Operation

No.	Impact	Environmental safeguards	Responsibility	Timing
TT09	Operational traffic management	Consult with residents who may be affected by the temporary closure of the highway closed due to scheduled maintenance or accident.	Transport project manager	Operation
Noise and vibration				
NV01	Construction noise and vibration management plan	A Construction Noise and Vibration Management Plan ~~should~~ will be prepared before any work begins which would include: • Identification of nearby sensitive receivers • Description of works, construction equipment and hours work would be completed in • Criteria for the proposal and relevant licence and approval conditions • Requirements for noise and vibration monitoring • Details of how community consultation would be completed • Procedures for handling complaints • Details on how respite would be applied where ongoing high impacts are seen at certain receivers.	Contractor	Prior to construction
NV02	Construction noise and vibration assessments	Location and activity specific noise and vibration impact assessments ~~should~~ will be carried out prior to (as a minimum) activities: • With the potential to result in noise levels above 75 dBA at any receiver • Required outside Standard Construction Hours likely to result in noise levels in greater than the relevant Noise Management Levels • With the potential to exceed relevant criteria for vibration. The assessments should confirm the predicted impacts at the relevant receivers in the vicinity of the activities to aid the selection of appropriate management measures, consistent with the requirements of the CNVG.	Contractor	Prior to construction
NV03	Construction noise exceedances	~~The assessment has identified that 'highly intrusive' impacts are likely at the nearest receivers when noise intensive equipment such as concrete saws or rockbreakers are in use, especially during evening and night-time periods.~~	Contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		Where noise intensive equipment is to be used near sensitive receivers, the work ~~should~~ will be scheduled for Standard Construction Hours, where possible. If it is not possible to restrict the work to the daytime, then they ~~should~~ work will be completed as early as possible in each work shift. Appropriate respite ~~should~~ will also be provided to affected receivers in accordance with the CNVG and/or the proposal's conditions of approval.		
NV04	Compounds noise	Hoarding, or other shielding structures, ~~should~~ will be used where receivers are impacted near compounds or fixed work areas with long durations. To provide effective noise mitigation, the barriers should break line-of-sight from the nearest receivers to the work and be of solid construction with minimal gaps.	Contractor	Construction
NV05	Vibration – monitoring	Monitoring ~~should~~ will be carried out at the start of noise and/or vibration intensive activities to confirm that actual levels are consistent with the predictions and that appropriate mitigation measures from the CNVG have been implemented.	Contractor	Construction
NV06	Construction traffic	Potential construction noise impacts from construction traffic ~~should~~ will be reviewed ~~at a later stage~~ during detailed design when more information is available.	Contractor Transport project manager	Detailed design
NV07	Vibration work within minimum working distance	Where work is within the minimum working distances and considered likely to exceed the cosmetic damage criteria: • Different construction methods with lower source vibration levels ~~should~~ will be investigated and implemented, where feasible • Attended vibration measurements ~~should~~ will be carried out at the start of the work to determine actual vibration levels at the item. Work should be ceased if the monitoring indicates vibration levels are likely to, or do, exceed the relevant criteria.	Contractor	Construction
NV08	Vibration work within minimum working distance	~~Certain receivers in the study area are within the human comfort minimum working distance and occupants of affected buildings may be able to perceive vibration impacts when vibration intensive equipment is in use.~~	Contractor	Detailed design

No.	Impact	Environmental safeguards	Responsibility	Timing
		The potential human comfort impacts and requirement for vibration intensive work ~~should~~ will be reviewed ~~as the proposal progresses~~ during detailed design, and any updated controls or mitigation included in the Noise and Vibration Management Plan.		
NV09	Vibration impacts on structures	Building condition surveys ~~should~~will be completed before and after construction ~~the work~~where buildings or structures are within the minimum working distances and considered likely to exceed the cosmetic damage criteria during the use of vibration intensive equipment and/or blasting activities.	Contractor	Prior to construction
NV10	Blasting	~~The following is recommended to be considered to manage impacts during blasting:~~ A blast management plan ~~should~~will be prepared prior to the start of blasting. This will include: • A schedule of trial blasts ~~should~~ to be carried out at locations where ~~when~~ blasting is proposed to occur within the minimum working distances • Monitoring of overpressure and vibration levels should be carried out at the potentially most affected receivers for each blast • Notification of all potential affected receivers ~~should occur~~ at least 24 hours prior to blasting.	Contractor	Prior to construction
NV11	Blasting	A Flyrock Management Plan ~~would~~will be developed to manage the potential impacts of flyrock during blasting. This would be developed in consultation with technical specialists. Management measures to be considered would include: • Implementing a minimum clearance distance of 500 metres to non-construction personnel • Temporary evacuation of residents within a 150 metre radius of each planned blast • Timing of blasting to minimise disruption to local residents • Use of blast mats and soil cover.	Contractor	Prior to construction

No.	Impact	Environmental safeguards	Responsibility	Timing
NV12	Operational road traffic noise mitigation measures	As proposals progress through the early design stages, road design features will be evaluated to minimise road traffic noise where necessary. This would include: • Adjustments to vertical and horizontal alignments • Road gradient modifications • Traffic management • Cost effective use of won proposal spoil to provide landscape mounds where there is suitable site footprint.	Contractor	Detailed design
NV13	Operational road traffic noise mitigation measures	~~Where it is determined that receivers would still have residual exceedances of the Noise Criteria Guideline criteria, site specific 'additional noise mitigation measures would be required.~~ For receivers that qualify for consideration of additional noise mitigation, potential noise mitigation measures are to be considered in the following order of preference: • At-source mitigation such as quieter road pavement surfaces • In-corridor mitigation such as noise mounds and noise barriers • At-receiver mitigation including at-property treatments.	Contractor	Prior to construction
Aboriginal heritage				
AH01	Aboriginal heritage management	An Aboriginal Heritage Management Plan (AHMP) will be developed in consultation with the RAPs to document standard procedures for: • Unexpected finds procedure for the discovery of Aboriginal ancestral remains, Aboriginal objects or new Aboriginal sites consistent with RMS (2015) Standard Management Procedures Unexpected Heritage Items • Detailed site salvage strategy • Management and curation of salvaged Aboriginal objects • Detailed locations and installations procedures for fencing and protective coverings	Contractor Transport project manager	Prior to construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		• Details of permissible activities and permissible vehicle access inside protected Aboriginal areas • Heritage components of induction package for construction workers and supervisors • Any other heritage matters addressed in the Conditions of Approval for the proposal.		
AH02	Minimise impacts to Aboriginal heritage sites	Detailed design will investigate opportunities to minimise impacts to: • Forty Bends contact site • 45-4-1111 (GWH 42) • GWH RS01.	Contractor	Detailed design
AH03	Retention of sites located under elevated structures	The feasibility of retaining portions of sites that are located under elevated structures (bridges) over River Lett and on River Lett Hill will be investigated as part of the detailed design process, including the following sites: • 45-4-1097 (GWH 07) • 45-4-1072 (GWH 09) • [redacted] Site • GWH 20-2.	Contractor Transport project manager	Detailed design
AH04	Aboriginal cultural values interpretation	A cultural heritage interpretation strategy will be developed for the proposal and will include both Aboriginal and non-Aboriginal heritage considerations. The cultural heritage interpretation strategy will form part of the Urban Design Plan and will include consideration of ~~Across the proposal~~, the following interpretation elements ~~have been considered~~ for design integration: • Public works of art • Interpretive signage • Bridges • Earthworks	Contractor Transport project manager	Detailed design

No.	Impact	Environmental safeguards	Responsibility	Timing
		• Plantings. • ~~Noise walls~~		
AH05	Impacts to Aboriginal heritage during construction	Construction works will be closely confined to the minimum possible area required for construction activities. Haulage and other access roads will be designed and located to minimise potential disturbance of soils. Maximising the protection is particularly important in the zone within 100 metres of creeks and may require covering the original cultural deposits in temporary protective barriers such as geotextile fabric and a layer of clean fill.	Contractor	Detailed design
AH06	Impacts to Aboriginal heritage during construction	Temporary fencing will be placed on the boundary of the following Aboriginal heritage sites: • GWHAS01 • GWH 20-3 • GWH 20-2 • 45-4-1103 (GWH 31) • 45-4-1097 (GWH 7) • 45-4-1072 (GWH 9) • 45-4-1071 (GWH 8) • [redacted] Site • South Bowenfels Rural Fire Brigade Site • Magpie Hollow Road site • 45-4-1111 (GWH 42).	Contractor	Prior to construction
AH07	Community collection	Salvage collection is warranted at those Aboriginal sites in the construction footprint where stone artefacts have been recorded on the surface. Salvage collection is to record MGA coordinates of each artefact by GPS and relevant artefact attributes consistent with the broader archaeological salvage analysis. The results of salvage collection should be collated in an Aboriginal Site Salvage Report (ASSR). Salvage collection will be carried out by a suitably qualified archaeologist. Sites requiring salvage collection include:	Contractor	Prior to construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		• 45-4-1103 (GWH 31) • 45-4-1097 (GWH 7) • 45-4-1075 (GWH 12) • 45-4-1074 (GWH 11) • GWH 20-3.		
AH08	Salvage excavation	Salvage excavation will be carried out by a suitably qualified archaeologist (refer to Section 1.6 of the Code of Practice) to define the western limit of artefact distribution in accordance with the requirements outlined in Section 10.2 of Appendix G for the following sites: • GWH 20-2 • 45-4-1103 (GWH 31) • 45-4-1097 (GWH 7) • 45-4-1072 (GWH 9) • 45-4-1071 (GWH 8) • [redacted] Site • South Bowenfels Rural Fire Brigade Site • Magpie Hollow Road site.	Contractor	Prior to construction
AH09	Aboriginal heritage sites	An Aboriginal Heritage Impact Permit (AHIP) will be required under Section 90 of the NP&W Act before any known Aboriginal heritage sites are impacted.	Transport project manager	Prior to construction
AH09	Aboriginal heritage sites	Aboriginal site information recording forms (ASIRF) are to be completed for each site and submitted to OEH to be updates on AHIMS.	Transport project manager	Prior to construction
AH10	Unexpected finds	*The Standard Management Procedure - Unexpected Heritage Items* (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 Transport does not have approval to disturb the object/s	Contractor	Prior to construction Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		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.		
Non-Aboriginal heritage				
NH01	Discovery of historical heritage materials features or deposits	If at any time during the construction of the proposal, historical heritage materials, features and/or deposits are located, the Transport Standard Management Procedure: Unexpected Heritage Items (unexpected finds protocol) (Transport for NSW 2019) will be implemented. The works will not re-commence until the requirements of the procedure have been satisfied.	Contractor	Construction
NH02	Discovery of human remains	In the event that construction activities reveal possible human skeletal material (human remains), the Transport Standard Management Procedure Unexpected Heritage Items (unexpected finds protocol) (Transport for NSW 2019) will be implemented. These guidelines have been developed in consultation with Heritage NSW and are consistent with the requirements of the Skeletal Remains: Guidelines for Management of Human Skeletal Remains under the Heritage Act (NSW Heritage Office 1998).	Contractor	Construction
NH03	Inadvertent impacts by contractors during construction	Historical heritage awareness training will be provided for contractors prior to the commencement of construction works to ensure understanding of known and potential heritage items that may be impacted or otherwise encountered during the proposed works. This training will include specific mention of the procedure required in the event unexpected heritage finds or human remains are encountered.	Contractor	Construction
NH04	Direct impacts to heritage fabric/within an item's heritage curtilage	Design consideration ~~should~~will be given to the heritage item and proposed works with critical assessment of the necessity of the proposed impacts for the following items: • Road culvert and retaining wall at Emoh (LEP A027)	Contractor	Detailed design

No.	Impact	Environmental safeguards	Responsibility	Timing
		• Bowenfels Presbyterian Cemetery (LEP A030) If the impacts cannot be mitigated through design, additional justification will be required to inform the item's Statement of Heritage Impact.		
NH05	Direct impacts to heritage fabric	An archival recording of the heritage item ~~would~~will be carried out, in accordance with the guidelines Photographic Recording of Heritage Items Using Film or Digital Capture (Heritage Council of NSW 2006) at the following sites: • Billesdene Grange (LEP I023) • Section of Coxs River Road (unlisted) • Lyndoch Orchard (LEP I019) • Bridge over the River Lett (unlisted) • Historical bullock track and creek crossing (unlisted) • Road culvert and retaining wall at Emoh (LEP A027) Dependant on the nature and complexity of the heritage item and the potential impact of the proposed works, the archival recording may also include additional primary or archival research, and additional digital data capture methods such as 3D scanning.	Contractor Transport project manager	Prior to construction
NH06	Proposed works within the curtilage of an SHR listed heritage item	Options to reduce the construction footprint within the SHR curtilage ~~should~~is to be considered at the following items: • Hartley Historic Village (SHR 00992/LEP I043) • Fernhill (SHR 00225/LEP I043) An archival recording of the heritage item ~~would~~will be carried out, in accordance with the guidelines Photographic Recording of Heritage Items Using Film or Digital Capture (Heritage Council of NSW, 2006). The appropriate heritage permits must be obtained prior to construction. This will be an approval under either Section 60 or subsection 57(2) of the Heritage Act. Either application will require the approval of the NSW Heritage Council or its delegate.	Contractor	Detailed design

No.	Impact	Environmental safeguards	Responsibility	Timing
NH07	Changes to, or exacerbation of existing, water runoff and drainage in proximity to a heritage item	An assessment of existing drainage and water runoff ~~on the item should~~will be completed for the following items: • House (LEP I021) • Meads Farm (LEP I020) Options to mitigate drainage or runoff issues through the installation of drainage infrastructure or other modifications ~~should~~ will be explored ~~prior to or~~during detailed design.	Contractor Transport project manager	Detailed design
~~NH08~~	~~Direct impact to heritage fabric with unknown impacts~~	~~Structural assessment by a heritage structural engineer in order to determine the structural capability of the causeway, the probable impacts from the road construction and required compaction, and any additional management or mitigation measures at Billesdene Grange (LEP I023). Archaeological investigation of the area of impact should be completed in order to fully understand the structure and enable a comprehensive archival recording to be produced.~~	~~Contractor~~	~~Prior to construction~~
NH09	Removal of old, rare, or otherwise significant trees or vegetation	The remnant orchard trees at Lyndoch Orchard (LEP I019) ~~should~~ will be examined by a qualified arborist and assessed for significance and horticultural value. Potential for propagation or preservation of any rare, old, or otherwise significant examples or varieties ~~should have~~will be carried out if feasible ~~potential for propagation or preservation considered~~.	Transport project manager	Prior to construction
NH10	Construction (cut or fill) of large road cuttings, embankments or batter slopes	~~Attempts should be made, w~~Where possible, ~~to blend~~new batter slopes and embankments will be blended with existing topography near: • Rosedale (LEP I024) • Meads Farm (LEP I020) • Old Roman Catholic Cemetery (LEP A015) • Hartley Historic Village (SHR 00992/LEP I043) • Fernhill (SHR 00225/LEP I043) Where the construction requires vegetation removal, embankment design should aim to be of an obtuse angle such that revegetation or new landscape planting is possible	Contractor Transport project manager	Detailed design Prior to construction Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
NH11	Removal of visually significant vegetation or areas of existing mature trees	~~Wherever possible, areas where vegetation removal is required should attempt to r~~Revegetation and landscaping ~~the area, with~~is to consider plantings to match the existing landscape (trees replacing trees, grasses replacing grasses) at the following items: • Rosedale (LEP I024) • Billesdene Grange (LEP I023) • Harp of Erin (LEP I028) • Meads Farm (LEP I020) • Old Roman Catholic Cemetery (LEP A015) • Fernhill (SHR 00225/LEP I043) • Old Catholic Cemetery (LEP A029). Landscaping of new works elements should not introduce plantings of tall height species if they did not previously exist in that location. This should aid in maintaining an open landscape where suitable and screening vegetation where it currently exists.	Contractor/Transport project manager	Detailed Design/Construction
NH12	Structures not expected to be sensitive to vibration impacts, but need this to be confirmed prior to construction	The need for dilapidation survey ~~should~~will be confirmed for the following items, with consideration to the proposed works and expected construction plant to be used in their proximity, in order to confirm whether they would be sensitive to vibration impacts during construction: • Billesdene Grange (LEP I023) • Log Cabin Farmhouse Village Shop (unlisted) • House (LEP I021) • Lyndoch Orchard (LEP I019) • Old Roman Catholic Cemetery (LEP A015) • St John the Evangelist's Anglican Church (LEP I029) • Stone and Timber Cottage (LEP I045) • Bowenfels National School Site (SHR 00761/LEPI054).	Contractor	Prior to construction

No.	Impact	Environmental safeguards	Responsibility	Timing
NH13	Structures considered to be sensitive to vibration impacts during construction	A dilapidation report ~~should~~will be prepared prior to construction for each of the following sensitive heritage item to assess, on a case-by-case basis, whether the fabric would be sensitive to vibration impacts during construction or operation: • Rosedale (LEP I024) • Nioka (LEP I025) • Harp of Erin (LEP I028) • House (LEP I021) • Meads Farm (LEP I020) • Hartley Historic Village (SHR 00992/LEP I043) • Bridge over the River Lett (unlisted) • Fernhill (SHR 00225/LEP I043) • Emoh (Emu Store/Corderoy's Store) (LEP I051) • Road culvert and retaining wall at Emoh (LEP A027) • Umera (Bowenfels Inn, Tricks House) (LEP I052) • Ben Avon (former Royal Hotel) (LEP I053) • Old Catholic Cemetery (LEP A029) • Somerset House (LEP I057) • Parsonage Farm (LEP I058) • Presbyterian Church and Sessions Hall (LEP I059) • Bowenfels Presbyterian Cemetery (LEP A030) • Caldwells House (LEP I061). Vibration monitoring ~~would~~ will be carried out on sensitive heritage items for at least the period of construction. Monitoring ~~should~~ would continue at least 12 months after the completion of works to determine if ongoing impacts are occurring i.e. identify any operational damage attributable to the proposal.	Contractor	Prior to construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		Surfacing and construction methods in proximity to sensitive heritage items ~~should~~ will be in accordance with the Transport criteria for construction adjacent to sensitive heritage buildings. The dilapidation report for each cemetery ~~should~~ would involve archival recording/photographs showing the present state of monuments, followed by an assessment of any tilting of headstones or cracking of slabs that may be attributable to roadworks.		
NH14	Vibration impacts during construction	Where a heritage item is deemed sensitive to vibration impacts, the more stringent German Standard guideline values (DIN 4150) ~~should~~will be followed when assessing minimum safe distances and determining allowable plant and its maximum vibration level. This may require a greater safety buffer to be maintained between the heritage item a particular vibration-intensive construction equipment.	Contractor	Construction
NH15	Ground disturbance in an area of low archaeological potential	Test excavations will be required at the following sites prior to ground disturbance works and will be carried out in accordance with the requirements of an Excavation Permit Exemption under ~~Application for as~~s139(4) of the Heritage Act: ~~exception and test excavation or monitoring of ground disturbance works by an appropriately qualified archaeologist are required at the following locations:~~ • Harp of Erin (LEP I028) • Hartley Historic Village (SHR 00992/LEP I043) • Archaeological potential on unidentified Lot (unlisted). Test excavations and/or monitoring of ground disturbance works will be carried out by appropriately qualified archaeologist. ~~Test excavation prior to, or monitoring during ground disturbance works in this area under a s139 exception.~~	Contractor	Prior to construction
NH16	Ground disturbance in an area of moderate archaeological potential	Test excavations will be required prior to ground disturbance at the following sites, and will be carried out in accordance with the requirements of a s140 permit under the Heritage Act: ~~Test excavation under a s140 permit or an Exemption to an Excavation Permit under Section 139(4) of the Heritage Act is required at the following sites~~:	Contractor	Prior to construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		~~• Hartley Historic Site (SHR 00992/LEP I043)~~ • Ben Avon (LEP I053) • Former Bowenfels Lockup (unlisted) • Bowenfels Presbyterian Cemetery (LEP A030). For works within the SHR curtilage, the excavations would also require approval under s60 of the Heritage Act instead. Where test excavations are proposed, an archaeological research design and methodology ~~must~~ will be prepared in accordance with Archaeological Assessments: Archaeological Assessment Guidelines (NSW Heritage Office 1996a)		
NH17	Disturbance of an area of high archaeological potential	~~As the causeway at Billesdene Grange (LEP I023) is considered to be an archaeological 'work' it does not trigger the requirement for a s140 permit~~Archaeological investigation ~~should~~will be completed under appropriately qualified supervision to expose, investigate and record the Billesdene Grange causeway fabric. A detailed archival recording of the causeway and Billesdene Grange (LEP I023) frontage to the Great Western Highway ~~should~~will be completed prior to works. Investigation will include structural assessment by a heritage structural engineer in order to determine the structural capability of the causeway, the probable impacts from the road construction and required compaction, and any required additional management or mitigation measures.	Contractor	Prior to construction
NH18	Disturbance of an area with the potential for human remains	An ~~archaeological~~assessment ~~should be completed of the site Archaeological~~ of archaeological potential on unidentified Lot is to be completed, including a detailed survey of the lot and area of potential in order to assess the landform and identify any surface features, and remote sensing of an appropriate method. Based on the results of the survey and remote sensing, an archaeological research design should be prepared for management of the site and. It should include further research to try and ascertain the potential identity of the deceased and may subsequently include genealogical research to locate any of their descendants.	Contractor	Prior to construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		If the archaeological assessment identifies potential features, complete a test excavation. If the results are inconclusive then the area to be impacted should be monitored during the removal of topsoil by an appropriately qualified archaeologist. This work would require a s139 exception and should be completed with the support of a physical anthropologist in case potential human remains are identified.		
NH19	Properties unable to be accessed	Further assessment in the detailed design phase will be completed at the following locations in order to physically inspect these items and amend the desktop assessment of the items presented in this report: • Billesdene Grange (LEP I023) • House (LEP I021) • Meads Farm (LEP I020) • ~~Lyndoch Orchard (LEP I019)~~ • Archaeological potential on unidentified Lot (unlisted) • Fernhill (SHR 00225/LEP I043) • Emoh (I051) • Umera (LEP I052).	Contractor	Detailed design
Soils and surface water				
SW01	Erosion and sedimentation of soils / Surface water quality	A Construction Soil and Water Management Plan (CSWMP) ~~would~~ will be developed as a subplan to the CEMP and will outline measures to manage water quality impacts associated with construction work. The CWSMP will provide: • An Erosion and Sediment Control Plan (ESCP) including measures to mitigate erosion and sediment transport both within the construction footprint and offsite including requirements for the preparation of erosion and sediment control plans for all progressive stages of construction and the implementation of erosion and sediment control measures including the use of sediment basins	Contractor	Prior to construction Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		• Erosion and sediment control measures which would be implemented and maintained in accordance with *Managing Urban Stormwater – Soils and Construction, Volume 1* (Landcom, 2004) and *Volume 2D* (DECC, 2008) • Specified secure and bunded areas within ancillary facilities for refuelling, maintenance and washdown of construction plant, equipment, and vehicles • Measures to manage stockpiles including locations, separation of waste types, sediment controls and stabilisation • Measures to manage waste including classification and handling of spoil. • Measures to manage tannin leachates • Measures to manage accidental spills including requirement to maintain materials such as spill kits, an emergency response procedures and regular visual water quality checks when working near waterways • Controls for sensitive receiving environments which may include but not be limited to designation of 'no go' zone for construction plant and equipment (where application).		
SW02	Erosion and sedimentation of soils / Surface water quality	A soil conservation specialist will be engaged for the duration of construction of the proposal to provide advice on the planning an implementation of erosion and sediment control including review of the Construction Soil and Water Management Plan and Erosion and Sediment Control Plan.	Contractor Transport project manager	Prior to construction Construction
SW03	Neutral or Beneficial Effect (NorBE) assessment for water quality	A further NorBE assessment will be carried out during detailed design to confirm the location, size and type of water quality basins required for operation of the proposal. This will include, but not be limited to, an assessment of the following to demonstrate achievement of NorBE: • the quantity of runoff associated with the construction and operational phase • the quality of runoff proposed to be discharged to existing waterways through cross and longitudinal drainage.	Contractor	Detailed design

No.	Impact	Environmental safeguards	Responsibility	Timing
		MUSIC modelling carried out for this assessment will be made available to WaterNSW for review.		
SW04	Water reuse	A water reuse strategy will be developed as part of the CEMP for both construction and operation to reduce reliance on potable water. Any water from sediment basins will be checked to ensure compliance with *ANZG (2018) Water Quality Guidelines* for proper reuse.	Contractor	Detailed design Prior to construction Construction
SW05	Water balance	Changes to existing surface water flows and the need for a water balance assessment ~~may need to be carried out at the design stages to~~ will be determined during detailed design. This will be carried out should there be any potential impact ~~on~~to the quantity of surface runoff that is currently received at various private farm dams located at the downstream end (within about 500 metres) of the proposed road corridor~~. Any increases or decreases would need to be~~ (as quantified based on an average yearly runoff yield assessment at each of the affected farm dams). Where feasible, changes would be minimised to avoid impacts to adjacent property owners and maintain existing flow to private dams.	Transport project manager	Detailed design
SW06	Surface water quality impacts	A surface water quality monitoring program will be developed in accordance with the *Guidelines for Construction Water Quality Monitoring* (RTA, 2003). The program will monitor surface water quality prior to, and during, construction ~~and during operation~~.	Contractor Transport project manager	Prior to construction Construction ~~Operation~~
SW07	Surface water quality impacts	An Acid Sulfate Rock Management Plan (ASRMP) ~~would~~will be prepared to provide information on the mitigation and management of acid sulfate rock disturbed as part of the construction works.	Contractor	Detailed design Prior to construction Construction
Groundwater				

No.	Impact	Environmental safeguards	Responsibility	Timing
GW01	Evaluation of hydraulic conductivity test data	Once groundwater monitoring bores associated with the current geotechnical drilling program have been installed and slug tested, the hydraulic conductivity assumptions adopted for the Groundwater report (JAJV, 2021) will be reviewed in light of the test data. If test data shows hydraulic conductivity to deviate significantly from the assumed values in this report, then re-assessment of potential groundwater impacts and groundwater inflow rates will be required. A hydrogeologist will review the hydraulic conductivity test data once available and determine whether re-assessment of potential groundwater impacts/groundwater inflow rates with revised hydraulic conductivity assumptions is required.	Transport project manager	Prior to construction
GW02	Groundwater monitoring program	Groundwater monitoring will be carried out to acquire appropriate baseline data and to provide a basis by which the proposal impact on groundwater can be monitored. This would include: • Reviewing groundwater level measurement by data logger at all 26 scheduled proposal monitoring bores ~~(currently in process of being installed as part of geotechnical investigations)~~ • Prior to commencement of construction, a groundwater quality sampling round should be carried out at the 26 scheduled proposal groundwater monitoring bores. The analytes should comprise field parameters, major ions (chloride, sulphate, sodium, potassium, magnesium, calcium, carbonate and bicarbonate) and dissolved heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, zinc, iron and manganese) • <u>During construction, continuation of groundwater level measurement by data logger at all 26 scheduled proposal monitoring bores. The data should be downloaded and reviewed quarterly. Quarterly groundwater quality sampling rounds at select (locations and quantity to be confirmed at end of baseline period, prior to construction) proposal monitoring bores. The tested analytes should be the same as in pre-construction. The data should be reviewed after each sampling round.</u>	Transport project manager	Prior to construction and construction

No.	Impact	Environmental safeguards	Responsibility	Timing
~~GW03~~	~~Construction groundwater monitoring~~	~~During the construction phase, the following groundwater monitoring should occur:~~ • ~~Continuation of groundwater level measurement by data logger at all 26 scheduled proposal monitoring bores. The data should be downloaded and reviewed quarterly.~~ • ~~Quarterly groundwater quality sampling rounds at select (locations and quantity to be confirmed at end of baseline period, prior to construction) proposal monitoring bores. The tested analytes should be the same as those outlined in Section 6.3.1 of (JAJV, 2021). The data should be reviewed after each sampling round.~~	~~Contractor~~	~~Construction~~
~~GW04~~	~~Operational groundwater monitoring~~	~~During the operational phase the following groundwater monitoring should occur:~~ • ~~Continuation of groundwater level measurement by data logger at all 26 scheduled proposal monitoring bores. The data should be downloaded and reviewed quarterly.~~ • ~~Quarterly groundwater quality sampling rounds as per the construction period monitoring regime. The data should be reviewed after each sampling round. After one a year the data should be reviewed, and a decision made as to whether monitoring should continue.~~	~~Transport~~	~~Construction~~
Hydrology and flooding				
HF01	Operational flooding impacts	All cross-drainage structures including culverts and bridges ~~would~~will be constructed to cater for the 100 year ARI local and regional storm events to minimise upstream afflux.	Contractor	Detailed design
HF02	Operational flooding impacts	During detailed design, the height of the proposed road embankment adjacent to Boxes Creek ~~would~~will be reviewed or alternative designs considered to eliminate or reduce potential PMF impact.	Contractor	Detailed design
HF03	Operational flooding impacts	Additional flood modelling ~~would~~will be carried out during detailed design. If residual risk of embankment stress remains adjacent to Boxes Creek, a dam	Contractor	Detailed design

No.	Impact	Environmental safeguards	Responsibility	Timing
		safety check would be carried out and further mitigation such as a debris catch upstream would be considered.		
HF04	Operational flooding impacts	An eastwards shift of the Kelly Street service road will be considered during detailed design to mitigate potential flooding impacts at this location.	Contractor	Detailed design
Landscape character and visual impact				
LV01	Landscape character and visual impact	An Urban Design Plan will be prepared to support the final detailed proposal design and implemented as part of the CEMP. The Urban Design Plan will present an integrated urban design for the proposal, providing practical detail on the application of design principles and objectives identified in the environmental assessment. The Plan will include design treatments for: • location and identification of existing vegetation and proposed landscaped areas, including species to be used • built elements including retaining walls and bridges to ensure that they blend with the surrounding environment • fixtures such as seating, lighting, fencing and signs • details of the staging of landscape works taking account of related environmental controls such as erosion and sedimentation controls and drainage • procedures for monitoring and maintaining landscaped or rehabilitated areas. The Urban Design Plan will be prepared in accordance with relevant guidelines, including: • Beyond the Pavement (Transport for NSW, 2020b) • Landscape and design guideline (Roads and Maritime Services, 2018) • Bridge Aesthetics (Transport for NSW, 2019).	Contractor Transport project manager	Detailed design Prior to construction

No.	Impact	Environmental safeguards	Responsibility	Timing
LV02	Landscape character and visual impact	Detailed design of the proposal will consider, where feasible and reasonable: • Opportunities to reduce the construction footprint • Minimising the number of ancillary facilities required • Using visually recessive materials to minimise the visual dominance of the road • Investigating opportunities to reduce the bulk of structures • Minimising vegetation clearing and maximising revegetation and planting opportunities, particularly in high sensitivity areas where screening is required • Opportunities of planting in highway medians and glare guards to reduce headlight glare from incoming highway traffic, local road traffic and local residents • Ensuring residual land is developed to complement the existing landform • Opportunities to incorporate pedestrian and cycle connections.	Contractor Transport project manager	Detailed design
LV03	Landscape character and visual impact	Landscape planting and maintenance will be in accordance with the Lithgow City Council Weed List and include indigenous species endemic to the area. Locally collected seeds or bioregionally-sourced indigenous seeds and plants will be used where feasible.	Contractor Transport project manager	Detailed design Construction
LV04	Lighting	The design of temporary and permanent lighting will be carried out in accordance with ~~AS 1158.1 19861986~~AS 1158.1.1:2005 *Lighting for roads and public spaces, Part 1.1: Vehicular traffic (Category V) lighting - Performance and design requirements* and will avoid unnecessary light spill on adjacent residents or sensitive receivers.	Contractor Transport project manager	Detailed design Construction
LV05	Landscape character and visual impact	During construction, the following measures will be implemented: • Where reasonable and feasible provide suitable barriers to screen views from adjacent sensitive areas during construction	Contractor Transport project manager	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		• Return temporary works areas, such as ancillary facilities, to at least their pre-construction condition progressively throughout the works, where feasible, or once construction is complete • Identify, protect and retain existing trees located within the ancillary facility areas • Temporary lighting should be screened or diverted to reduce unnecessary light spill.		
Socio-economic				
SE01	Community consultation	A Community Communication Strategy (CCS) will be prepared for the proposal to facilitate communication with the local and regional communities including relevant Government agencies, Councils, adjoining landowners and businesses, residents, motorists and other relevant stakeholders that may be affected by the proposal. The strategy will: • Identify people or organisations to be consulted during the delivery of the proposal • Set out procedures and mechanisms for the regular distribution of information about the proposal • Outline mechanisms to keep relevant stakeholders updated on construction activities, schedules and milestones • Outline avenues for the community to provide feedback (including a 24-hour, toll free proposal information and complaints line) or to register complaints and through which Transport will respond to community feedback • Outline a process to resolve complaints and issues raised.	Contractor Transport project manager	Prior to construction Construction
SE02	Business impacts	Access will be maintained to local businesses near to construction works. Where temporary access changes are proposed, these will be agreed with the affected business owner.	Contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
SE03	Business impacts	Signage ~~would~~will be provided to key business locations such as Little Hartley and Hartley Historic Village during construction.	Contractor	Construction
SE04	Business impacts	Ongoing consultation will be carried out with local business owners at Little Hartley, Hartley Historic Village, Hartley and South Bowenfels that may be impacted during construction in accordance with Community Communication Strategy.	Contractor	Construction
SE05	Emergency vehicle access	Access for emergency vehicles will be maintained at all times during construction. Any site-specific requirements will be determined in consultation with the relevant emergency services agency (e.g. for South Bowenfels Rural Fire Brigade and Lithgow Hospital).	Contractor	Construction
SE06	Local access changes	Local communities and road users will be notified about access changes prior to implementation.	Contractor	Construction
Property and land use				
PL01	Leased land	Areas of land leased for the purposes of construction will be reinstated at the end of the lease to at least equivalent standard in consultation with the landowner.	Contractor	Construction
PL02	Property	All partial and full acquisitions and associated property adjustments will be carried out in accordance with the requirements of the *Land Acquisition (Just Terms Compensation) Act 1991* ~~and the *Transport for NSW Land Acquisition Information Guide* in consultation with landowners~~ , *Property Acquisition – A guide for residential owners* (NSW Government, 2021a) and *Property Acquisition – A guide for residential tenants* (NSW Government, 2021b). This will include the provision of monetary compensation determined in accordance with the provisions of the Act.	Transport project manager	Prior to construction
PL03	Property	Property adjustments for the proposal will be completed in consultation with property owners.	Contractor Transport project manager	Prior to construction Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
PL04	Property	Existing property access will be maintained during construction. Where this is not feasible or reasonable, temporary alternative access arrangements will be provided following consultation with the affected property owners.	Contractor Transport project manager	Construction
Contamination				
~~CN01~~	~~Detailed site investigation~~	~~A Detailed Site Investigation (DSI) is being carried out prior to construction to better understand the nature and extent of contamination in accordance with the NEPM (2013) and other guidelines made or endorsed by the NSW EPA.~~	~~Contractor~~	~~Prior to construction~~
CN02	Management of low risk contamination	A Contaminated Land Management Plan (CLMP) will be prepared. The CLMP will include: • Control measures to manage identified areas of elevated total coliforms, including surface soils in the vicinity of BH06, BH07, SS13, SS22 and BH15 containing elevated total coliforms • Control measures to manage potential contamination in agricultural areas from including limiting soil contact, use of correct personal protective equipment and education of contractors • Control measures to manage identified elevated cadmium and zinc in groundwater in the vicinity of GW01 and appropriately manage inflows prior to discharge or disposal • Control measures to manage potentially impacted groundwater (where intersected) from septic systems within the Forty Bends to Lithgow section • Management of groundwater encountered during excavation where dewatering is required as outlined in CN06 • Where coal tar is present, material should be managed/disposed of off-site in accordance with the NSW Government (2015) Technical Direction 21: coal tar asphalt handling and disposal procedure • Procedures for unexpected contamination as outlined in CN06A	Contractor	Prior to construction Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		• Requirements for the disposal of contaminated waste in accordance with the POEO Act and the Protection of the Environment Operations (Waste) Regulation 2014. ~~Where site investigation data confirms that contamination is likely to have a very low, low or moderate impact potential, the site would then be managed in accordance with Construction Environmental Management Framework.~~		
~~CN03~~	~~Remediation Action Plan~~	~~If identified as required following detailed site investigations, a Remedial Action Plan (RAP) would be developed for identified risk areas within the construction footprint.~~ ~~Each RAP would detail the remediation works required to mitigate risks from contamination throughout and following completion of construction. The RAP would be prepared in accordance with relevant NSW EPA guidelines and where applicable, detail remediation methodologies in accordance with Australian Standards and other relevant government guidelines and codes of practice.~~	~~Contractor~~	~~Prior to construction~~
~~CN04~~	~~Site audit statement~~	~~If identified as required following detailed site investigations, an accredited Site Auditor would review and approve the RAP and remediation activities and will develop a Site Audit Statement (SAS) and Site Audit Report (SAR) upon completion of remediation.~~	~~Contractor~~	~~Prior to construction~~
CN05	Residual contamination following construction	Ongoing management and monitoring measures would be documented in an appropriate form, for example an environmental management plan, and implemented for any areas where minor, residual contamination remains following construction.	Contractor	Construction
CN06	Unexpected finds procedure	An 'unexpected finds' protocol should be implemented as part of the CLMP to plan for and accommodate potential contamination impacts. Contingency measures as part of this procedure should include: • Stop work procedures: a suitably qualified and experienced consultant should then assess whether material is or is not contaminated • Treat suspected contaminated material as actually contaminated material and employ adequate environmental and safety controls	Contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		• Procedures for managing groundwater inflows, particularly in the vicinity of septic tanks, including minimising worker exposure, testing and appropriate disposal.		
Air quality				
AQ01	Air quality management	~~Develop and implement an~~An Air Quality Management Plan (AQMP) will be developed as a subplan to the CEMP~~as part of the Construction Environmental management Plan (CEMP)~~. In addition to detailing how the measures above should be implemented, the AQMP should also identify: • Potential sources of air pollution (including odours and dust) during construction • Air quality management objectives consistent with any relevant published guidelines • Methods to manage works during strong winds or other adverse weather conditions • A progressive rehabilitation strategy for exposed surfaces • When the air quality, suppression and management measures need to be applied, who is responsible, and how effectiveness will be assessed • A monitoring program to record whether the air quality mitigation, suppression and management measures have been applied; and assess the effectiveness of the applied measures.	Contractor	Prior to construction Construction
AQ02	Dust emissions during construction	Minimise the extent of disturbed and exposed areas, and revegetate finished areas as soon as possible.	Contractor	Construction
AQ03	Dust emissions during construction	Minimise the drop heights of materials.	Contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
AQ04	Dust emissions during construction	Review and where necessary modify or suspend activities during dry and windy weather and background air quality conditions.	Contractor	Construction
AQ05	Dust emissions during construction	Cover or otherwise regularly stabilise (with water sprays or binders) stockpiles.	Contractor	Construction
AQ06	Dust emissions during construction	Regularly water haul routes, minimise vehicle speed onsite and ensure that all loads are covered.	Contractor	Construction
AQ07	Dust emissions during construction	Regularly inspect and remove debris from plant and equipment to avoid the tracking of materials on to the adjacent road network.	Contractor	Construction
AQ08	Dust emissions during construction	To the extent practical, position ancillary sites and stockpiles away from nearby sensitive receivers.	Contractor	Construction
AQ09	Exhaust emissions from plant and equipment used during construction	Inspect all plant and equipment before it is used on-site.	Contractor	Prior to construction Construction
AQ10	Exhaust emissions from plant and equipment used during construction	Ensure all vehicles, plant, and equipment operate in a proper and efficient manner.	Contractor	Construction
AQ11	Exhaust emissions from plant and	Switch off all vehicles, plant and equipment when not in-use.	Contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
	equipment used during construction			
AQ12	Exhaust emissions from plant and equipment used during construction	Avoid the use of diesel or petrol-powered generators and use mains electricity or battery powered equipment where practicable.	Contractor	Construction
AQ13	Odours and airborne hazardous substances from uncovered contaminated materials	Apply odour supressing agents to materials as necessary to minimise related impacts should any contaminated or hazardous materials be uncovered during the works.	Contractor	Construction
AQ14	Odours and airborne hazardous substances from uncovered contaminated materials	Adhere to relevant requirements for removal and disposal listed in the *Work Health and Safety Act 2011*, and *Work Health and Safety Regulation 2017*.	Contractor	Construction
AQ15	Emissions to air and visual impacts from blasting activities	Prior to firing, review and confirm that the blast would not likely result in any dust or fume-related impacts. This should include a review of whether meteorological conditions (ie inversions, wind speeds and directions, stability, time of day, cloud cover, temperature and humidity are suitable.	Contractor	Construction
AQ16	Emissions to air and visual impacts from blasting activities	Where possible, avoid blasting during early morning and late afternoon when meteorological conditions are typically least favourable in terms of the potential for blast-related impacts.	Contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
Bushfire				
BF01	Emergency access during construction	In the event of a fire, emergency services will be able to gain access via existing Great Western Highway or tracks used for construction activities. Access and egress to/from private properties in bushfire prone areas adjoining the construction corridor will be maintained, with advice on any access changes provided to RFS in advance of the bushfire season.	Contractor	Construction
BF02	Hot works	Works that have potential to generate sparks or heat and ignite fires will be subject to the contractor's hot works safety management procedures. Hot works will not be carried out on total fire ban days except where permission has been given by the RFS. Construction equipment and contractor's vehicles will carry fire extinguishers or knap sacks to help extinguish any small fires that may be ignited by construction activities.	Contractor	Construction
BF03	Hazardous materials storage	Storage of hazardous and flammable materials should follow environmental protection guidance and be located in areas with low radiant heat exposure in the event of a bushfire. Any hazardous fuel storage areas should be free of vegetation or any other combustible materials that could contribute to a fire ignition.	Contractor	Construction
BF04	Emergency management	On site bushfire emergency management arrangements will be addressed through the construction contractor's site emergency management plan. This plan will specify notifications to emergency services in case of fire, emergency assembly areas and evacuation procedures. If a fire is ignited and cannot be safely contained using fire extinguishers or other materials at hand, construction crews will dial 000 and seek emergency service assistance.	Contractor	Construction
BF05	Operational bushfire risks	Grass within the highway corridor should be inspected and maintained at the commencement of the fire season (and through the fire season, if required) to reduce fuel loading and the potential for fire ignition and to create a low bushfire fuel zone in the immediate vicinity of the road.	Transport project manager	Operation

No.	Impact	Environmental safeguards	Responsibility	Timing
		Woody vegetation in the vicinity of the road should also be actively managed to remove dead plants. Roadside trees should be inspected for stability and safety following any fire event to minimise the risk posed to road users.		
BF06	Operational access	Design ~~would~~will incorporate the need for safe emergency vehicle access at all times.	Transport project manager	Operation
BF07	Fire weather signage	Roadside signage should be erected at either end of the proposal that informs road users of the daily fire weather forecast (i.e. the daily Fire Danger Rating). On days of highly elevated fire danger (extreme or catastrophic fire danger), additional advice should be posted that advises road users to reconsider the need for travel.	Transport project manager	Operation
~~BF08~~	~~Road closures~~	~~During active fire events in the landscape surrounding the proposal, emergency services should consider temporary road closures to all but emergency service vehicles.~~	~~Transport~~	~~Operation~~
Waste				
WM01	Waste management	A Waste Management Plan (WMP) will be prepared and implemented as part of the CEMP. The WMP will include but not be limited to: • Measures to avoid and minimise waste associated with the project • Classification of wastes and management options (reuse, recycle, stockpile, disposal) • Statutory approvals required for managing both on and off-site waste, or application of any relevant resource recovery exemptions • Procedures for storage, transport and disposal • Monitoring, record keeping and reporting. The WMP will be prepared taking into account the Environmental Procedure - Management of Wastes on Transport for NSW Land (Roads and Maritime Services, 2014) and relevant Transport for NSW Waste Fact Sheets.	Contractor	Prior to construction

No.	Impact	Environmental safeguards	Responsibility	Timing
WM02	Waste management	All wastes will be managed and disposed of in accordance with the Protection of the Environment Operations Act 1997 and the Protection of the Contractor Construction Environment Operations (Waste) Regulation 2014	Contractor	Construction
WM03	Waste disposal	Excavated material ~~would~~will be assessed for reuse as backfill material as part of the proposal. If material is unable to be used as general fill, structural backfill or onsite mounding material it would be appropriately tested and classified against the NSW EPA Waste Classification Guidelines Part 1: Classifying Waste (NSW EPA, 2014) and Addendum 1 (NSW EPA, 2016) prior to being disposed of off-site.	Contractor	Construction
WM04	Green waste	Where possible and suitable for use, cleared vegetation will be used as mulch or coarse woody debris for site erosion and sedimentation controls or rehabilitation.	Contractor	Construction
WM05	Fill material	Any required additional fill material will be sourced from appropriately licensed facilities and/or other construction projects wherever possible. Additional fill material will be sourced and verified as suitable for use in accordance with relevant EPA and Transport guidelines.	Contractor	Construction
Sustainability, greenhouse gas and climate change				
GH01	Greenhouse gas emissions	~~Undertaking d~~Detailed modelling will be carried out to ensure that cut and fill balances are managed to minimise any unnecessary movements of material.	Contractor	Detailed design
GH02	Greenhouse gas emissions	Review opportunities to specify biofuel use on construction plant and equipment based on site for long periods.	Contractor	Detailed design
GH03	Greenhouse gas emissions	Review opportunities to use alternative materials in construction, such as fly ash as a supplementary cementitious material (to replace traditional Portland cement) and reclaimed aggregate.	Contractor	Detailed design Construction
GH04	Greenhouse gas emissions	Specify high recycled content in steel use (where technically possible and cost effective).	Contractor	Detailed design

No.	Impact	Environmental safeguards	Responsibility	Timing
GH05	Flooding	Findings of the CCRA will be used to inform further design considerations, mitigation measures and management plans regarding flooding in and around the proposal alignment.	Contractor	Detailed design
GH06	Bushfire risk	Findings of the CCRA will be used to inform bushfire risk management measures and management plans.	Contractor	Detailed design
GH07	Climate projections	Adopt consideration of climate projections, flooding and bushfire risks when developing the detailed design and material consideration	Contractor	Detailed design
Cumulative				
CU01	Cumulative impacts	Ongoing coordination and consultation will be carried out with nearby projects as required.	Contractor Transport project manager	Prior to construction Construction
CU02	Cumulative impacts	The CEMP will be revised to consider potential cumulative impacts from surrounding development activities as they become known.	Contractor	Construction
CU03	Cumulative impacts	Opportunities for further design refinements ~~would~~ will be considered during detailed design to reduce potential impacts where feasible.	Contractor	Detailed design
CU04	Dust, exhaust and other emissions during construction	To the extent practical, plan the construction of the various segments of the proposal to avoid situations where sensitive receivers may be affected by emissions to air from multiple work areas.	Contractor	Prior to construction Construction

6.3 Licensing and approvals

Table 6-2 provides a summary of the licensing and approvals required for the proposal.

Table 6-2: Summary of licensing and approval required

Instrument	Requirement	Timing
Protection of the Environment Operations Act 1997 (s43)	Environment protection licence (EPL) for scheduled activities [if known describe the applicable scheduled activities eg road construction / extractive activities / crushing, grinding or separating etc] from the EPA.	Prior to start of the activity
Fisheries Management Act 1994 (s199)	Written notice of the proposed dredging and reclamation work must be given to the Minister for Agriculture and Western NSW, with consideration given to any comments provided within 21 days.	Prior to start of the activity
Fisheries Management Act 1994 (s220)	Permit to obstruct the free passage of fish (temporary or permanent) from the Minister for Agriculture and Western NSW.	Prior to start of the activity
National Parks and Wildlife Act 1974 (s90)	Aboriginal heritage impact permit from the Chief Executive of OEH.	Prior to start of the activity
National Parks and Wildlife Act 1974	Revocation of land reserved as a National Park to occur via an Act of Parliament.	Prior to the determination of any land reserved under the National Parks and Wildlife Act 1974
Water Management Act 2000	A water supply works approval to construct a work	Prior to start of the activity
Water Management Act 2000	A water use approval to use the water.	Prior to start of the activity
Heritage Act 1977	A section 60 permit or subsection 57(2) permit for works that have (or have the potential to have) a minor impact on the heritage significance of a State Heritage item.	Prior to start of the activity
Heritage Act 1977	A section 140 excavation permit to disturb or excavate any land in NSW that is likely to contain archaeological relics.	Prior to start of the activity
Heritage Act 1977	A section 139(4) excavation permit exemption.	Prior to start of the activity

A detailed summary of the heritage approvals required for specific heritage items is provided in Table 6-3.

Table 6-3: Summary of heritage approvals required

Proposal section	Heritage item (Register and ID)	Approval requirement
Little Hartley to River Lett	Billesdene Grange	• Under the ISEPP, impacts to a local heritage item which are more than negligible or minor, will require consultation with Lithgow City Council. Any response received within 21 days must be taken into consideration in the REF • As the causeway would be considered a work the proposal would not require an excavation permit, however best practice requires that its archaeological investigation by managed appropriately
Coxs River Road	Harp of Erin (LEP I028)	• The area of archaeological sensitivity behind the Harp of Erin within the construction footprint is assessed as having low potential. Test excavation in this area to determine the presence or absence of archaeological material within the construction footprint would require an Excavation Permit Exception under section 139 of the Heritage Act
	Lyndoch Orchard (LEP I019)	• Under the ISEPP, impacts to a local heritage item which are more than negligible or minor, will require consultation with Lithgow City Council. Any response received within 21 days must be taken into consideration in the REF
River Lett to Forty Bends	Hartley Historic Site (SHR 00992/LEP I043)	• Works within the SHR curtilage will require approval from the Heritage Council prior to construction under Section 60 or subsection 57(2) of the Heritage Act • Archaeological investigations or monitoring will also require an excavation permit under Section 60 of the Heritage Act
	Bridge over the River Lett (unlisted)	• Although not currently listed, best practice requires that the heritage values of the item should be managed appropriately • Information regarding the proposed impacts to the heritage item should be submitted with this assessment to Transport for their internal comment and approval as the determining authority
	Archaeological potential on unidentified Lot (unlisted)	• As an area of identified archaeological potential, the archaeological investigation would require a permit exception under Section 139 of the Heritage Act and the proposed works would require approval under Section 140 of the Heritage Act prior to construction
	Fernhill (SHR 00225/LEP I043)	• Works within the SHR curtilage will require approval from the Heritage Council prior to construction under Section 60 or subsection 57(2) of the Heritage Act

Proposal section	Heritage item (Register and ID)	Approval requirement
	Historic bullock track and creek crossing (unlisted)	• Although not currently listed, best practice requires that the heritage values of the item should be managed appropriately • Information regarding the proposed impacts to the heritage item should be submitted with this assessment to Transport for their internal comment and approval as the determining authority
Forty Bends to Lithgow	Ben Avon (LEP I053)	• As an area of identified archaeological potential, archaeological test excavations would require approval under Section 140 of the Heritage Act, or a permit exception under Section 139 of the Heritage Act prior to construction
	Former Bowenfels Lockup (unlisted)	• As an area of identified archaeological potential, archaeological test excavations would require approval under Section 140 of the Heritage Act, or a permit exception under Section 139 of the Heritage Act prior to construction
	Bowenfels Presbyterian Cemetery (LEP A030)	• Located within the curtilage of an archaeological item, the proposed works would require approval under Section 140 of the Heritage Act, or a permit exception under Section 139 of the Heritage Act prior to construction

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Terms and acronyms used in this REF submissions report

Term / Acronym	Description
AEP	Annual Exceedance Probability
AFG	Aboriginal Focus Group
ACHAR	Aboriginal Cultural Heritage Assessment Report
ACHCRP	Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010
AHIMS	Aboriginal Heritage Information Management Systems
AHIP	Aboriginal Heritage Impact Permit
AHMP	Aboriginal Heritage Management Plan
ANZG	Australian New Zealand Guidelines
AQMP	Air Quality Management Plan
ARI	Average Recurrence Interval
ASIRF	Aboriginal Site Information Recording Forms
ASRMP	Acid Sulfate Rock Management Plan
ASSR	Aboriginal Site Salvage Report
BAM	Biodiversity Assessment Method
BAMC	BAM Calculator
BC Act	*Biodiversity Conservation Act 2016*
BCR	Benefit Cost Ratio
BDAR	Biodiversity Development Assessment Report
BOS	Biodiversity Offset Strategy
CCRA	Climate Change Risk Assessment
CCS	Community Communication Strategy
CEMP	Construction Environmental Management Plan
CHL	Commonwealth Heritage List
CIS	Cultural Interpretation Strategy
CNVG	Construction Noise and Vibration Guideline
CNVMP	Construction Noise and Vibration Management Plan
CO2e	Carbon dioxide equivalent
COP26	United Nation's Climate Change Conference
CSWMP	Construction Soil and Water Management Plan

Term / Acronym	Description
DECC	NSW Department of Environment and Climate Change
dBA	Decibel
DSI	Detailed Site Investigation
DPI	NSW Department of Primary Industries
DPE	Department of Planning and Environment (formerly Department of Planning, Industry and Environment (DPIE))
DMR	Department of Main Roads, now known as Transport for NSW
EIL	Ecological Investigation Levels
EIS	Environmental Impact Assessment
ENMM	Environmental Noise Management Manual
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW). Provides the legislative framework for land use planning and development assessment in NSW.
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000* (NSW)
EPA	Environmental Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth). Provides for the protection of the environment, especially matters of national environmental significance, and provides a national assessment and approvals process.
EPL	Environment Protection Licence
ESCP	Erosion and Sediment Control Plan
ESD	Ecologically Sustainable Development
ESL	Ecological Screening Levels
EV	Electric Vehicle
GIL	Groundwater Investigation Levels
GWH	Great Western Highway
GWHUP	Great Western Highway Upgrade Program
HDPA	Hartley District Progress Association
HIL	Health Investigation Level
ICOMOS	Australia International Council on Monuments and Sites
ILUA	Indigenous Land Use Agreement
INSW	Infrastructure New South Wales
ISEPP	*State Environmental Planning Policy (Infrastructure)* 2007
LALC	Local Aboriginal Land Council

Term / Acronym	Description
LEP	Local Environmental Plan
LGA	Local Government Area
LoS	Level of Service
NARCliM	NSW and ACT Regional Climate Modelling
NCA	Noise Category Area
NEMP	National Environmental Management Plan
NEPM	*National Environment Protection Measures* (2013)
NHL	National Heritage List
NMG	Noise Mitigation Guideline
NorBE	Neutral or Beneficial Effect
NPW Act	*National Parks and Wildlife Act 1974* (NSW)
NPWS	National Parks and Wildlife Services
NSW	New South Wales
NSW EPA	NSW Environmental Protection Authority
NT	National Trust
OEH	Office of Environment and Heritage
OEMP	Operational Environmental Management Plan
PACHCI	Procedure for Aboriginal Cultural Heritage Consultation and Investigations
PAD	Potential Archaeological Deposits
PCT	Plant Community Types
PFAS	Per- and poly-fluoroalkyl substances
PMF	Probable Maximum Flood
Q&A	Question and Answer
RAP	Remedial Action Plan
RAPs	Registered Aboriginal Parties
REF	Review of Environmental Factors
RFS	Rural Fire Service
RMS	NSW Road and Maritime Services, now known as Transport for NSW
RNE	Register of the National Estate
RTA	Roads and Traffic Authority, now known as Transport for NSW
SAC	Site Assessment Criteria
SAS	Site Audit Statement

Term / Acronym	Description
SAQP	Sampling, Analysis and Quality Plan
SAR	Site Audit Report
SDWC	Sydney Drinking Water Catchment
SHI	State Heritage Inventory
SHR	State Heritage Register
TAGG	Transport Authorities Greenhouse Group
TBDC	Threatened Biodiversity Data Collection
TEC	Threatened Ecological Communities
Transport	Transport for NSW
TMP	Traffic Management Plan
TRAQ	Tool for Roadside Air Quality
TRH	Total Recoverable Hydrocarbon
WHL	World Heritage List
WMP	Waste Management Plan

Appendix A

Summary table of respondents, submission numbers and responses

Respondent	Submission No.	Section number where issues are addressed
Individual	1	2.1
Individual	2	2.2.3, 2.2.5, 2.14.1
Individual	3	2.6.9
Individual	4	2.7.3, 2.7.10, 2.7.11
Individual	5	2.3.1, 2.6.6, 2.9.1, 2.11, 2.15.2, 2.21.1
Individual	6	2.3.1, 2.3.2, 2.6.1, 2.6.6, 2.7.1, 2.8.5, 2.13, 2.14.1, 2.15.2, 2.15.3, 2.16.1
Individual	7	2.3.1, 2.3.2, 2.5.2, 2.6.4, 2.7.2, 2.11
Individual	8	2.8.3, 2.8.5, 2.16.3
Individual	9	2.7.4, 2.8.1, 2.8.4, 2.8.5, 2.12
Individual	10	2.7.2, 2.8.1, 2.8.2, 2.8.4, 2.8.5, 2.13
Individual	11	2.2.5, 2.3.2, 2.3.3, 2.10.1
Individual	12	2.2.1, 2.2.2, 2.2.4, 2.2.5, 2.3.2, 2.3.3, 2.6.3, 2.6.11, 2.6.12, 2.7.11, 2.9.1, 2.10.1, 2.14.1, 2.16.1, 2.16.2, 2.16.3, 2.21.6
Individual	13	2.14.1, 2.16.2, 2.21.4, 2.21.6
Individual	14	2.2.5, 2.6.9, 2.6.11, 2.9.1, 2.9.2, 2.9.3
Individual	15	2.3.1, 2.3.2, 2.3.5, 2.5.2, 2.6.5, 2.7.1, 2.7.7, 2.8.3, 2.8.5, 2.9.1, 2.10.1, 2.14.1, 2.16.2, 2.16.3, 2.16.5, 2.16.6, 2.18.1, 2.18.2
Individual	16	2.2.2, 2.2.5, 2.3.2, 2.6.8, 2.19.1, 2.19.2, 2.21.2
Individual	17	2.3.1, 2.5.3, 2.7.11, 2.15.2
Individual	18	2.3.1, 2.3.2, 2.15.2
Individual	19	2.1
Individual	20	2.2.3, 2.2.4, 2.6.4, 2.9.1, 2.10.1, 2.14.1, 2.16.2

Respondent	Submission No.	Section number where issues are addressed
Individual	21	2.3.1, 2.21.6
Individual	22	2.3.1, 2.3.2, 2.3.4, 2.3.5, 2.6.4, 2.9.4, 2.10.1, 2.15.2, 2.21.6
Community group – Hartley District Progress Association	23	2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.2.5, 2.3.2, 2.3.3, 2.3.4, 2.4.1, 2.4.2, 2.4.3, 2.5.1, 2.5.2, 2.5.3, 2.6.1, 2.6.4, 2.6.5, 2.6.9, 2.6.10, 2.6.11, 2.6.12, 2.7.1, 2.7.2, 2.7.3, 2.7.4, 2.7.6, 2.7.7, 2.7.8, 2.7.9, 2.7.11, 2.8.1, 2.8.2, 2.8.3, 2.8.4, 2.8.5, 2.8.6, 2.9.1, 2.9.2, 2.10.1, 2.10.2, 2.10.3, 2.11, 2.14.1, 2.15.2, 2.16.1, 2.16.3, 2.18.1, 2.18.2, 2.20.1, 2.21.3, 2.21.5
Individual	24	2.2.5, 2.14.1
Individual	25	2.2.2, 2.2.3, 2.2.4, 2.5.1, 2.6.4, 2.6.7, 2.7.2, 2.9.1, 2.10.1, 2.11, 2.14.1
Individual	26	2.2.3, 2.2.4, 2.3.2, 2.3.4, 2.7.2, 2.9.1, 2.16.1
Individual	27	2.2.2
Individual	28	2.2.2, 2.2.4, 2.3.1, 2.3.4, 2.8.6, 2.9.1, 2.14.1
Individual	29	2.2.5, 2.6.4, 2.7.6, 2.9.1, 2.10.1, 2.11
Individual	30	2.3.2, 2.6.2, 2.6.4, 2.6.5, 2.15.3
Individual	31	2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.3.2, 2.3.4, 2.5.2, 2.6.9, 2.7.1, 2.7.2, 2.10.2, 2.15.2, 2.21.3, 2.21.6
Individual	32	2.5.2, 2.5.4, 2.6.4, 2.6.9, 2.7.6
Individual	33	2.2.5
Individual	34	2.6.5, 2.9.1
Individual	35	2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.2.5, 2.3.2, 2.3.4, 2.5.1, 2.5.2, 2.6.4, 2.6.9, 2.7.11, 2.8.2, 2.8.6, 2.9.1, 2.10.2, 2.11, 2.14.1, 2.15.1, 2.15.2, 2.15.6, 2.16.1, 2.21.3
Individual	36	2.2.1, 2.2.3, 2.2.4, 2.3.2, 2.3.3, 2.3.4, 2.6.9, 2.8.5, 2.9.1, 2.10.1, 2.14.1, 2.15.2, 2.16.1, 2.21.6
Individual	37	2.2.2, 2.2.3, 2.2.4, 2.3.1, 2.3.2, 2.3.4, 2.6.9, 2.7.3, 2.7.6, 2.9.1, 2.10.2, 2.15.2

Respondent	Submission No.	Section number where issues are addressed
Individual	38	2.2.1, 2.2.3, 2.2.4, 2.3.2, 2.3.4, 2.6.9, 2.7.6, 2.8.2, 2.8.6, 2.9.1, 2.10.2, 2.15.2, 2.21.3, 2.21.6
Individual	39	2.2.3, 2.6.9, 2.7.2, 2.9.1
Individual	40	2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.3.1, 2.3.2, 2.7.2, 2.8.6, 2.14.1, 2.18.1, 2.18.2
Individual	41	2.2.5, 2.6.9, 2.9.1, 2.10.1, 2.14.1
Individual	42	2.9.1
Individual	43	2.6.9, 2.9.1
Individual	44	2.9.1
Individual	45	2.3.2, 2.3.3, 2.15.2, 2.21.6
Individual	46	2.2.2, 2.2.3, 2.2.4, 2.5.2, 2.6.1, 2.6.9, 2.7.11, 2.8.2, 2.8.5, 2.9.1, 2.10.1, 2.10.2, 2.14.1, 2.16.5, 2.18.1, 2.18.2
Individual	47	2.2.1, 2.2.3, 2.2.4, 2.2.5, 2.3.4, 2.5.1, 2.6.9, 2.7.7, 2.8.3, 2.9.1, 2.10.1, 2.11, 2.15.2, 2.16.2, 2.16.5, 2.19.1, 2.21.3
Government agency – WaterNSW	48	3.2
Individual	49	2.2.2, 2.2.4, 2.3.2, 2.5.6, 2.7.1, 2.7.6
Individual	50	2.2.3, 2.5.2, 2.9.1
Individual	51	2.9.1
Individual	52	2.1, 2.21.6
Individual	53	2.2.2, 2.2.2, 2.2.3, 2.2.4, 2.3.2, 2.3.3, 2.3.4, 2.4.1, 2.6.4, 2.6.9, 2.6.12, 2.7.1, 2.7.2, 2.7.3, 2.7.11, 2.8.1, 2.8.2, 2.8.5, 2.8.6, 2.9.1, 2.10.2, 2.14.1, 2.14.4, 2.15.2, 2.15.6, 2.16.1, 2.16.5, 2.21.3
Individual	54	2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.3.2, 2.3.3, 2.3.4, 2.6.9, 2.7.11, 2.8.2, 2.9.1, 2.14.1, 2.16.1, 2.21.3, 2.21.6

Respondent	Submission No.	Section number where issues are addressed
Individual	55	2.2.3, 2.2.4, 2.3.2, 2.3.4, 2.6.9, 2.7.1, 2.7.2, 2.7.11, 2.8.2, 2.9.1, 2.10.1, 2.10.2, 2.14.1, 2.15.2, 2.16.1, 2.21.3
Individual	56	2.2.3, 2.2.4, 2.3.2, 2.3.3, 2.3.4, 2.4.3, 2.5.2, 2.6.9, 2.7.11, 2.9.1, 2.10.2, 2.14.1, 2.15.2
Individual	57	2.2.5, 2.3.2, 2.5.1, 2.8.4, 2.9.1, 2.10.1, 2.11, 2.14.1, 2.16.3, 2.19.3, 2.21.6
Individual	58	2.2.2, 2.2.3, 2.2.4, 2.3.1, 2.3.2, 2.4.3, 2.5.1, 2.8.2, 2.9.1, 2.10.2, 2.11, 2.12, 2.14.1, 2.15.2, 2.15.4, 2.15.5, 2.21.6
Individual	59	2.2.1, 2.2.3, 2.2.4, 2.3.2, 2.6.9, 2.7.3, 2.7.11, 2.8.5, 2.9.1, 2.10.1, 2.10.2, 2.15.2, 2.19.3
Individual	60	2.2.1, 2.3.2, 2.6.9, 2.7.3, 2.7.11, 2.9.1, 2.15.2, 2.19.1, 2.21.3, 2.21.6
Individual	61	2.5.3, 2.10.1, 2.10.2
Individual	62	2.2.3, 2.2.4, 2.3.1, 2.5.2, 2.6.9, 2.7.11, 2.8.3, 2.8.6, 2.14.1, 2.15.2, 2.21.3
Individual	63	2.6.4, 2.6.9, 2.10.1
Individual	64	2.2.5, 2.3.1, 2.3.2, 2.3.3, 2.3.6, 2.8.5
Individual	65	2.2.5, 2.3.2, 2.5.4, 2.7.11, 2.9.1, 2.10.1, 2.11, 2.15.2, 2.16.1
Individual	66	2.3.2, 2.10.1
Individual	67	2.7.1, 2.15.4
Individual	68	2.6.4, 2.6.9, 2.8.5, 2.9.1, 2.10.1, 2.11, 2.14.1
Individual	69	2.2.3, 2.2.4, 2.3.1, 2.3.4, 2.8.2, 2.9.1, 2.10.1, 2.14.1, 2.17, 2.21.6
Individual	70	2.2.5, 2.8.5
Individual	71	2.16.3
Individual	72	2.1
Individual	73	2.3.1, 2.6.4, 2.9.1, 2.14.1

Respondent	Submission No.	Section number where issues are addressed
Individual	74	2.2.3, 2.2.4, 2.3.1, 2.3.2, 2.6.9, 2.7.3, 2.7.6, 2.7.11, 2.8.5, 2.9.1, 2.16.1
Individual	75	2.3.1, 2.3.2
Individual	76	2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.2.5, 2.3.2, 2.3.5, 2.6.9, 2.7.6, 2.7.11, 2.8.2, 2.9.1, 2.11, 2.13, 2.14.1, 2.15.3, 2.16.1, 2.18.1, 2.19.1, 2.21.3
Individual	77	2.1
Individual	78	2.6.9, 2.9.1, 2.10.1
Individual	79	2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.2.5, 2.3.2, 2.3.4, 2.5.1, 2.5.2, 2.5.3, 2.5.7, 2.6.9, 2.7.1, 2.7.2, 2.7.11, 2.8.2, 2.9.1, 2.10.2, 2.13, 2.14.1, 2.15.2, 2.15.6, 2.21.1, 2.21.3
Individual	80	2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.3.2, 2.3.4, 2.6.9, 2.7.1, 2.8.2, 2.9.1, 2.10.1, 2.10.2, 2.16.1, 2.21.3
Individual	81	2.6.4, 2.6.9, 2.9.1
Individual	82	2.7.2, 2.18.1
Individual	83	2.3.4, 2.8.6
Individual	84	2.6.9
Individual	85	2.1
Individual	86	2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.3.2, 2.3.3, 2.3.4, 2.6.9, 2.7.1, 2.7.11, 2.8.2, 2.9.1, 2.10.1, 2.10.2, 2.14.1, 2.16.1, 2.21.3
Individual	87	2.2.1, 2.2.3, 2.2.4, 2.3.2, 2.3.3, 2.3.4, 2.6.9, 2.8.2, 2.9.1, 2.10.2, 2.16.1, 2.21.3
Individual	88	2.1
Individual	89	2.2.3, 2.2.4, 2.3.2, 2.3.4, 2.5.1, 2.5.3, 2.6.1, 2.6.10, 2.7.6, 2.7.11, 2.9.1, 2.10.1, 2.11, 2.12, 2.14.1, 2.15.2, 2.15.4, 2.15.6, 2.15.5
Individual	90	2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.3.2, 2.3.3, 2.3.4, 2.4.3, 2.6.1, 2.6.4, 2.6.9, 2.7.1, 2.7.2, 2.7.3, 2.7.11, 2.8.2, 2.9.1, 2.9.2,

Respondent	Submission No.	Section number where issues are addressed
		2.10.1, 2.10.2, 2.14.1, 2.15.2, 2.15.6, 2.16.1, 2.16.2, 2.20.1, 2.21.3, 2.21.6
Individual	91	2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.3.1, 2.3.2, 2.3.4, 2.6.7, 2.6.9, 2.7.2, 2.7.3, 2.7.6, 2.8.2, 2.9.1, 2.10.1, 2.10.2, 2.11, 2.13, 2.14.1, 2.15.4, 2.16.1, 2.16.5, 2.20.2, 2.21.3, 2.21.6
Individual	92	2.1
Individual	93	2.1
Individual	94	2.1
Individual	95	2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.3.2, 2.3.3, 2.3.4, 2.4.3, 2.6.4, 2.6.9, 2.7.1, 2.7.2, 2.7.3, 2.7.11, 2.8.2, 2.9.1, 2.9.2, 2.10.1, 2.10.2, 2.14.1, 2.15.2, 2.15.6, 2.16.1, 2.20.2, 2.21.3, 2.21.6
Individual	96	2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.3.2, 2.3.3, 2.3.4, 2.4.3, 2.6.4, 2.6.9, 2.7.1, 2.7.2, 2.7.3, 2.7.11, 2.8.2, 2.9.1, 2.9.2, 2.10.1, 2.10.2, 2.14.1, 2.15.2, 2.15.6, 2.16.1, 2.20.2, 2.21.3
Individual	97	2.2.1, 2.2.2, 2.3.1, 2.3.2, 2.6.9, 2.7.3, 2.8.1, 2.8.5, 2.9.1, 2.10.1, 2.14.1, 2.14.4, 2.21.6
Individual	98	2.1
Individual	99	2.1
Individual	100	2.2.3, 2.2.4, 2.3.2, 2.6.9, 2.7.2, 2.8.2, 2.9.1, 2.10.1, 2.14.1, 2.15.2, 2.16.5,
Individual	101	2.2.1, 2.2.2, 2.2.4, 2.3.2, 2.6.4, 2.6.5, 2.6.8, 2.7.2, 2.8.1, 2.9.1, 2.10.1, 2.14.1, 2.16.1, 2.17, 2.19.1, 2.19.3
Individual	102	2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.2.5, 2.3.1, 2.3.2, 2.3.3, 2.3.4, 2.6.7, 2.6.9, 2.7.1, 2.7.2, 2.7.3, 2.7.4, 2.8.2, 2.8.5, 2.9.1, 2.10.1, 2.10.2, 2.11, 2.13, 2.14.1, 2.15.2, 2.16.1, 2.16.5, 2.18.2, 2.20.2, 2.21.3, 2.21.6
Individual	103	2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.3.1, 2.3.2, 2.3.3, 2.3.4, 2.6.9, 2.7.2, 2.8.2, 2.8.6, 2.9.1, 2.10.1, 2.10.2, 2.14.1, 2.16.1, 2.21.3, 2.21.6
Individual	104	2.7.11

Respondent	Submission No.	Section number where issues are addressed
Individual	105	2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.3.1, 2.3.2, 2.5.1, 2.6.4, 2.6.9, 2.7.2, 2.8.2, 2.9.1, 2.10.2, 2.14.1, 2.15.2, 2.16.1, 2.16.3, 2.21.6
Individual	106	2.2.3, 2.2.4, 2.2.5, 2.3.2, 2.3.4, 2.7.11, 2.9.1, 2.10.1, 2.11, 2.14.1, 2.15.2
Individual	107	2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.2.5, 2.3.2, 2.3.3, 2.3.4, 2.4.1, 2.5.2, 2.6.9, 2.7.1, 2.7.2, 2.7.7, 2.7.11, 2.8.5, 2.9.1, 2.10.1, 2.10.2, 2.11, 2.14.1, 2.15.2, 2.15.5, 2.16.1, 2.16.2, 2.16.4, 2.21.3, 2.21.6
Individual	108	2.2.3, 2.2.4, 2.3.4, 2.7.11, 2.10.1, 2.14.1
Individual	109	2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.2.5, 2.3.2, 2.3.4, 2.4.1, 2.6.1, 2.6.4, 2.6.9, 2.7.2, 2.7.4, 2.7.7, 2.7.11, 2.7.12, 2.8.1, 2.8.2, 2.14.1, 2.14.2, 2.15.1, 2.16.2, 2.16.5, 2.19.2, 2.20.1, 2.21.32.2.5
Individual	110	2.2.1, 2.2.2, 2.3.1, 2.8.1, 2.8.5, 2.10.1, 2.14.1, 2.20.1
Individual	111	2.21.6
Individual	112	2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.3.2, 2.6.9
Individual	113	2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.3.1, 2.3.2, 2.5.3, 2.6.9, 2.7.2, 2.7.4, 2.8.1, 2.8.2, 2.8.3 , 2.8.5, 2.9.1, 2.9.4, 2.10.1, 2.14.1, 2.15.2, 2.15.6, 2.16.1, 2.21.3, 2.21.6
Individual	114	2.2.1, 2.2.3, 2.2.4, 2.2.5, 2.3.2, 2.3.4, 2.6.9, 2.6.10, 2.7.2, 2.7.11, 2.8.4, 2.9.1, 2.10.2, 2.11, 2.12, 2.13, 2.14.1, 2.15.2
Individual	115	2.2.1, 2.2.3, 2.2.5, 2.3.1, 2.5.1, 2.6.9, 2.6.11, 2.7.1, 2.7.11, 2.8.5, 2.9.1, 2.10.2, 2.13, 2.14.4, 2.15.2
Individual	116	2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.3.2, 2.4.1, 2.6.9, 2.7.11, 2.9.1, 2.10.1, 2.10.2, 2.15.2, 2.21.3
Individual	117	2.3.4, 2.6.4, 2.6.7, 2.11, 2.15.2, 2.16.3
Individual	118	2.1
Individual	119	2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.2.5, 2.3.2, 2.3.4, 2.4.3, 2.5.1, 2.6.1, 2.6.4, 2.6.9, 2.7.2, 2.7.4, 2.7.7, 2.7.11, 2.7.12, 2.8.1, 2.8.2, 2.8.6, 2.9.1, 2.11, 2.14.1, 2.14.2, 2.15.2, 2.16.2, 2.16.5, 2.20.1, 2.21.3

Respondent	Submission No.	Section number where issues are addressed
Individual	120	2.2.1, 2.2.3, 2.2.4, 2.3.1, 2.3.2, 2.3.3, 2.3.4, 2.6.9, 2.6.10, 2.7.2, 2.7.3, 2.9.1, 2.10.1, 2.11, 2.14.1, 2.16.1, 2.21.3, 2.21.6
Individual	121	2.6.9
Individual	122	2.8.5
Individual	123	2.2.1, 2.2.2, 2.3.1, 2.3.2, 2.6.9, 2.8.5, 2.9.1, 2.10.4, 2.14.1,2.14.3
Individual	124	2.2.1, 2.2.3, 2.2.4, 2.2.5, 2.3.4, 2.6.9, 2.7.1, 2.7.2, 2.9.1, 2.10.1, 2.10.2, 2.14.1, 2.16.1, 2.21.6
Individual	125	2.2.5, 2.3.2, 2.5.1, 2.10.1
Individual	126	2.1
Individual	127	2.2.3, 2.2.5, 2.5.2, 2.6.9, 2.7.7, 2.9.1, 2.9.2, 2.9.3
Individual	128	2.2.4, 2.7.6, 2.9.1
Individual	129	2.2.3, 2.2.5, 2.4.1, 2.4.3, 2.6.9, 2.7.7, 2.10.1, 2.14.1
Individual	130	2.2.3, 2.9.1
Individual	131	2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.2.5, 2.2.6, 2.3.2, 2.3.3, 2.3.4, 2.4.1, 2.5.1, 2.5.3, 2.5.5, 2.6.9, 2.7.1, 2.7.3, 2.7.6, 2.7.10, 2.7.11, 2.8.3, 2.8.4, 2.9.1, 2.10.1, 2.14.1, 2.15.2, 2.15.5, 2.15.6, 2.21.3, 2.21.6
Individual	132	2.2.2, 2.2.3, 2.2.4, 2.2.5, 2.3.2, 2.3.3, 2.3.4, 2.4.1, 2.5.1, 2.5.3, 2.5.5, 2.6.4, 2.6.9, 2.7.1, 2.7.3, 2.7.6, 2.7.10, 2.7.11, 2.8.3, 2.8.4, 2.10.1, 2.14.1, 2.15.2, 2.15.5, 2.15.6, 2.21.3, 2.21.6
Individual	133	2.2.3, 2.2.5, 2.3.2, 2.3.4, 2.5.1, 2.5.3, 2.6.4, 2.6.9, 2.7.11, 2.8.4, 2.14.1, 2.15.2, 2.18.1, 2.18.2
Individual	134	2.2.1, 2.2.3, 2.2.5, 2.3.4, 2.5.1, 2.6.4, 2.6.10, 2.9.1, 2.11, 2.14.1, 2.15.6
Individual	135	2.2.3, 2.2.4, 2.21.6
Individual	136	2.9.1

Respondent	Submission No.	Section number where issues are addressed
Individual	137	2.2.3, 2.2.5, 2.3.2, 2.5.1, 2.5.5, 2.6.4, 2.7.11, 2.8.4, 2.14.1, 2.15.2
Individual	138	2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.3.4, 2.6.9, 2.7.2, 2.8.2, 2.9.1, 2.10.1, 2.10.2, 2.14.1, 2.15.2, 2.16.1, 2.21.3
Government Agency – National Parks and Wildlife Service	139	4.3
Community group – Blue Mountains Cycling Safety Forum	140	2.7.4, 2.21.3
Individual	141	2.2.1, 2.2.2, 2.5.1, 2.15.2
Individual	142	2.2.1, 2.2.2, 2.2.4, 2.2.5, 2.2.6, 2.3.2, 2.3.3, 2.3.4, 2.6.1, 2.6.4, 2.6.9, 2.7.7, 2.7.11, 2.8.1, 2.8.2, 2.14.2, 2.15.2, 2.21.3
Individual	143	2.2.3, 2.2.5, 2.5.2, 2.6.9, 2.7.7, 2.9.1, 2.9.3, 2.10.1, 2.14.1
Community Group	144	2.2.1, 2.2.3, 2.2.5, 2.3.2, 2.5.3, 2.9.1, 2.9.4, 2.10.1, 2.10.2, 2.10.3, 2.14.1, 2.14.4, 2.20.1
Individual	145	2.2.3, 2.2.4, 2.2.5, 2.3.2, 2.4.3, 2.6.4, 2.6.7, 2.6.9, 2.6.10, 2.7.2, 2.7.11, 2.8.3, 2.8.3, 2.8.5, 2.9.1, 2.10.1, 2.11, 2.14.1
Individual	146	2.2.5, 2.6.9, 2.9.1
Individual	147	2.2.1, 2.2.3, 2.2.4, 2.2.5, 2.2.5, 2.3.2, 2.3.4, 2.5.2, 2.6.10, 2.7.1, 2.7.6, 2.7.11, 2.8.2, 2.9.1, 2.10.1, 2.10.2, 2.14.1, 2.16.1, 2.20.2, 2.21.3
Individual	148	2.1
Individual	149	2.6.4
Individual	150	2.7.1
Individual	151	2.7.3, 2.7.7, 2.7.11
Individual	152	2.2.1, 2.2.2, 2.2.4, 2.3.2, 2.7.11, 2.14.1
Individual	153	2.3.4

Respondent	Submission No.	Section number where issues are addressed
Individual	154	2.2.2, 2.2.3, 2.2.4, 2.3.4, 2.14.1, 2.15.2
Individual	155	2.2.5, 2.7.6, 2.7.7, 2.8.4, 2.14.1
Individual	156	2.2.4, 2.2.5, 2.3.2, 2.3.4, 2.6.4, 2.7.6, 2.10.1, 2.14.1
Individual	157	2.7.6
Individual	158	2.3.4, 2.15.2, 2.21.6
Individual	159	2.3.1, 2.3.2, 2.6.12, 2.21.4, 2.21.6
Individual	160	2.7.2, 2.7.11
Individual	161	2.20.2
Individual	162	2.2.4
Individual	163	2.2.3, 2.2.4, 2.6.9, 2.10.1, 2.14.1
Individual	164	2.19.1, 2.21.6
Individual	165	2.7.11, 2.8.4
Community group – Warrabinga Wiradjuri Native Title Claimants Aboriginal Corporation	166	2.5.2, 2.9.1
Community group – Wiradjuri Plains Group	167	2.21.6
Individual	168	2.15.2
Individual	169	2.10.2
Individual	170	2.2.5, 2.5.3
Individual	171	2.10.1, 2.21.3
Individual	172	2.5.3
Individual	173	2.5.3, 2.9.1

Respondent	Submission No.	Section number where issues are addressed
Individual	174	2.6.4, 2.10.1
Individual	175	2.5.2, 2.10.1
Individual	176	2.2.4, 2.2.5
Individual	177	2.2.5, 2.6.4, 2.7.6
Individual	178	2.3.1
Individual	179	2.2.4, 2.5.1, 2.6.9, 2.9.1, 2.10.1, 2.14.1
Individual	180	2.2.3, 2.2.4, 2.3.2, 2.7.6
Government agency – Lithgow City Council	181	3.4

Appendix B

Addendum Biodiversity Development Assessment Report

Appendix C

Addendum Non-Aboriginal heritage report

Appendix D

Stage 2 Contamination Assessment

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