

# Olympic Highway Intersection Upgrades

Submissions report

January 2023

[transport.nsw.gov.au](https://transport.nsw.gov.au)

# Acknowledgement of Country

Transport for NSW acknowledges the Wiradjuri People, the traditional custodians of the land on which the Olympic Highway intersection upgrades in Wagga Wagga project is proposed.

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

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

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



# Table of Contents

<b>Executive Summary</b> .....	<b>6</b>
The proposal .....	6
Display of the Review of Environmental Factors .....	7
Summary of issues and responses.....	7
Proposal design .....	8
Traffic and transport.....	9
Socio-economic and liveability: access and connectivity.....	9
Socio-economic and liveability: community safety .....	10
Additional assessments .....	10
Aboriginal cultural assessment .....	10
Biodiversity assessments .....	10
Noise and vibration assessment .....	11
Soil and water assessments .....	11
Next steps .....	12
<b>Introduction and background</b> .....	<b>13</b>
The proposal .....	13
REF display .....	18
Purpose of the report .....	18
<b>Response to issues</b> .....	<b>19</b>
Overview of issues raised .....	19
Proposal design.....	22
Expansion of Gobbagombalin Bridge .....	22
Roundabouts at both intersections.....	23
Grade separation works .....	24
Travers Street intersection design.....	25
Old Narrandera Road intersection design .....	26

Changes to Moorong Street access.....	26
Improvements to existing roads.....	27
Upgrades to the Pearson Street / Sturt Highway intersection .....	27
Changes to the horse pathway.....	27
Traffic and transport .....	28
Traffic lights are ineffective .....	28
Increased traffic due to residential growth.....	28
Trial using temporary traffic lights .....	29
Merging on Olympic Highway .....	29
Left-in, left-out arrangement at Moorong Street.....	30
Traffic capacity at Gobbagombalin Bridge .....	31
Heavy vehicles using Olympic Highway.....	31
Traffic at the Pearson Street / Sturt Highway intersection.....	32
Traffic monitoring.....	32
Traffic modelling.....	32
Flood events.....	38
Socio-economic and liveability: access and connectivity .....	38
Moorong Street access .....	38
Emergency vehicle access .....	39
Access for horses.....	39
Pedestrian and cyclist access .....	40
Access to bus routes .....	40
Socio-economic and liveability: community safety .....	41
Traffic accidents .....	41
Traffic signals.....	41
Traffic cameras .....	41
School drop off areas .....	42
Heavy vehicles using Kincaid Street .....	42
Horses crossing Travers Street .....	42
Road speed limits .....	43

Street lighting.....	43
Socio-economic and livability: business and industry .....	44
Impact to local businesses .....	44
Consultation .....	44
REF display .....	44
Addressing community concerns .....	45
Consultation with Council .....	45
Aboriginal cultural heritage .....	47
Cultural significance of the proposal area.....	47
Consultation.....	47
Site surveys .....	48
Site inductions and toolbox talks .....	49
Incorporating Aboriginal culture into the proposal .....	49
Biodiversity .....	50
Rehabilitation works .....	50
Noise and vibration.....	51
Heavy vehicles in residential areas .....	51
Noise controls .....	51
Construction activities.....	52
Planned construction schedule.....	52
Future plans for Wagga Wagga.....	52
Wagga Wagga City Council plans .....	52
<b>Changes to the proposal.....</b>	<b>53</b>
Travers Street design .....	53
<b>Environmental assessments .....</b>	<b>56</b>
Aboriginal cultural heritage assessment.....	56
Summary of additional study and consultation .....	56
Description of existing environment.....	56
Potential impacts and revised safeguards and management measures .....	57
Procedure for Aboriginal cultural heritage consultation and investigation – Stage 1.....	60

Biodiversity assessments .....	60
Summary of assessments and reports .....	60
Noise and vibration assessment .....	63
Summary of methodology .....	63
Description of existing environment .....	64
Potential impacts and revised safeguards and management measures .....	64
Water and soil assessments.....	65
Summary of assessments and reports .....	65
<b>Environmental management .....</b>	<b>69</b>
Environmental management plans (or system) .....	69
Summary of safeguards and management measures .....	69
Licensing and approvals.....	97
<b>References .....</b>	<b>98</b>



# Executive Summary

## The proposal

Transport for NSW is proposing to upgrade the Olympic Highway intersections at Old Narrandera Road and Travers Street in Wagga Wagga. The Old Narrandera Road intersection is located north of Gobbagombalin Bridge over the Murrumbidgee River, next to the northern Wagga Wagga suburb of Estella. The Travers Street intersection is located south of Gobbagombalin Bridge near the Wagga Wagga city centre. The proposal would improve road safety at both intersections, access between growth areas and services in Wagga Wagga, travel times, and support future residential growth in the area.

Key features of the proposal would include:

- **at the Old Narrandera Road intersection:**
  - building a second right turn lane for traffic exiting Old Narrandera Road onto the Olympic Highway
  - extending the current Boorooma Street ramp to form a second southbound through lane on the Olympic Highway, merging south of the intersection
  - retaining the current right-turn lane from the Olympic Highway into Old Narrandera Road
  - retaining the current left-turn slip lane from the Olympic Highway into Old Narrandera Road
  - installing traffic lights at the intersection of Old Narrandera Road and the Olympic Highway, and associated utility connections
  - potentially constructing a second northbound through lane on the Olympic Highway from Old Narrandera Road to Boorooma Street exit
  - acquiring property in the south-western corner of the intersection
  - extending existing culverts under the Olympic Highway and Old Narrandera Road
  - removing native vegetation, including up to 0.11 hectares (ha) of a threatened ecological community and 12 hollow-bearing trees (HBTs)
  - carrying out general construction activities, including relocating existing utilities
  - retaining construction access tracks permanently to provide future safe access for inspecting and maintaining the road, traffic signals and utilities.
- **at the Travers Street intersection:**
  - relocating the intersection about 80 metres south of the existing roundabout to allow for two southbound lanes on the Olympic Highway
  - building about 200 metres of new road to realign Travers Street
  - installing traffic lights at the new intersection and associated utility connections
  - reconfiguring Olympic Highway lanes at the new intersection to include turning lanes into Travers Street
  - changing the Moorong Street northern connection onto the Olympic Highway to create a left-in left-out arrangement
  - building a northbound right turning lane into Travers Street

- changing Olympic Highway northbound lanes south of the Travers Street intersection, with traffic to merge into a single lane before the intersection and new right turning lane
- removing native vegetation, including five hollow-bearing trees
- removing the roundabout and existing Travers Street connection to the Olympic Highway
- increasing the retaining wall height and installing traffic barriers at the horse underpass culvert on the Olympic Highway
- changing the pathway on both sides of the Olympic Highway horse underpass culvert, including relocating the pathway and installing fences
- providing driveway access and parking on the old Travers Street road surface for the Wiradjuri Walking Track
- potentially relocating temporarily and/or widening the Wiradjuri Walking Track under Gobbagombalin Bridge
- carrying out general construction activities, including relocating existing utilities.

## Display of the Review of Environmental Factors

Transport prepared a Review of Environmental Factors (REF) for the Olympic Highway intersection upgrades. The REF was publicly displayed for 33 days between 20 September 2021 and 22 October 2021. The REF was placed on Transport's project website and made available for download.

During this time, Transport invited the public to provide feedback and consulted residents and businesses who would be directly affected by the proposal.

Due to COVID-19 restrictions, no printed copies were publicly displayed. However, Transport offered a hard copy version of the REF on request to anyone unable to view the document online.

Following the REF display period and receipt of submissions from stakeholders and the community, consultation was carried out with Registered Aboriginal Parties (RAPs) and First Nations cultural knowledge holders during the Aboriginal cultural heritage assessment for the proposal.

## Summary of issues and responses

Public display of the REF and the supporting consultation resulted in a total of 79 submissions. This included one submission from Wagga Wagga City Council, two submissions from the Independent Member for Wagga Wagga, six submissions from local businesses, service providers and associations, and 70 submissions from individual community members.

Of the 79 submissions, 11 per cent showed support for the proposal, 57 per cent opposed the proposal, 28 per cent offered suggestions to improve the proposal, 3 per cent were indifferent and 1 per cent provided an invalid response.

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



## Proposal design

In summary, of the submissions received, 62 per cent raised a concern or suggestion regarding the proposal design, including:

- **Expansion of Gobbagombalin Bridge**
  - **Issue:** Gobbagombalin Bridge needs to be duplicated to two lanes in each direction to relieve current and future traffic congestion along the bridge.
  - **Response:** Duplication of the existing bridge is out of scope for the proposal. The proposal is a short to medium-term solution to improve traffic efficiency and road safety. The proposal has been designed to allow for the future duplication of Gobbagombalin Bridge.
- **Changes to design at each intersection**
  - **Issue 1:** Roundabouts are preferred over traffic lights at the Travers Street and Old Narrandera Road intersections.
  - **Issue 2:** Suggestion for an overpass or underpass from Old Narrandera Road, which would allow traffic and heavy vehicles to move more freely.
  - **Response:** An options assessment was initially carried out by Transport for the proposal to determine the preferred option. The preferred option was chosen to increase traffic capacity and network efficiency, while also improving road safety. This option was considered the most sustainable option as it would likely limit the need for further work to the Old Narrandera Road and Travers Street intersections over the next few decades, thereby resulting in overall cost savings, reduced environmental impacts, and less disruption to road users.
- **Designated left-turn lanes**
  - **Issue 1:** The existing left-turn lane into Travers Street from Gobbagombalin Bridge should remain to allow traffic to exit onto Travers Street without waiting at the traffic lights. This would improve traffic flow along Olympic Highway and minimise traffic congestion on Gobbagombalin Bridge, while providing fast access into the Wagga Wagga CBD.
  - **Issue 2:** The proposal should retain the left-turn lane from Old Narrandera Road onto Olympic Highway, allowing traffic to exit and travel northbound on Olympic Highway without waiting at the traffic lights. This would improve traffic flow along Old Narrandera Road.
  - **Issue 3:** The proposal should include a left-turn slip lane from Olympic Highway travelling northbound onto Old Narrandera Road to allow traffic to exit onto Old Narrandera Road without waiting at the traffic lights. This would improve traffic flow along Olympic Highway.
  - **Response:** The proposal includes a left and through lane for southbound traffic exiting the Olympic Highway onto Travers Street. The proposal will retain the current left-turn slip lane from the Olympic Highway onto Old Narrandera Road. The current left-turn slip lane from Old Narrandera Road travelling northbound along Olympic Highway will also be retained.

## Traffic and transport

Of the submissions received, 41 per cent raised a concern regarding traffic and transport impacts, including:

- **Traffic lights are ineffective**
  - **Issue:** Traffic lights will not solve the issue of traffic congestion along Olympic Highway.
  - **Response:** An options assessment and extensive traffic modelling were carried out to determine which option would have significant improvements to road safety and network efficiency. While the proposal may result in some minor delays because of the traffic signals, it is expected to improve traffic flow across the network by assisting driver decision-making when turning onto/off the Olympic Highway.
- **Increased traffic due to residential growth**
  - **Issue:** It is predicted residential areas in the outer suburbs of Wagga Wagga will grow substantially in the next five years, which would increase traffic along Olympic Highway and Gobbagombalin Bridge.
  - **Response:** The proposal aims to address existing traffic congestion issues at the Old Narrandera Road and Travers Street intersections with Olympic Highway and minimise future issues arising due to growth in the Wagga Wagga area, while also addressing road safety concerns.
- **Trial using temporary traffic lights**
  - **Issue:** Request for a trial of the proposal using temporary traffic lights, to assess the effectiveness of traffic lights in improving traffic flow along Olympic Highway.
  - **Response:** Transport does not propose to trial temporary traffic lights, as this would not provide a realistic reproduction of the new proposed layout which has additional through lanes, turning lanes and intersection treatments compared to the current layout.

## Socio-economic and liveability: access and connectivity

Of the submissions received, 15 per cent raised a concern regarding impacts to access and connectivity, including:

- **Moorong Street access**
  - **Issue 1:** Heavy vehicles will have difficulty delivering goods and services to businesses along Moorong Street with the left-in, left-out arrangement at the northern end.
  - **Issue 2:** Traffic will have to travel south along Moorong Street to the Kincaid Street intersection in order to access Travers Street.
  - **Issue 3:** Heavy vehicles servicing businesses along Moorong Street will not have enough space to turn around to exit at Kincaid Street intersection.
  - **Response:** Following feedback from the community, Transport changed the northern Moorong Street design. The change includes a u-turn bay, removing conflicts of traffic turning across the highway at this location, which will improve safety. Access via Kincaid Street will remain, which would result in about two extra minutes of travel from Gobbagombalin Bridge to the northern end of Moorong Street.
- **Emergency vehicle access**
  - **Issue:** Concern emergency vehicles will not be able to tend to an incident due to idling vehicles at the traffic lights and congestion on Gobbagombalin Bridge.
  - **Response:** Transport carried out extensive traffic modelling for the proposal, which found queues on Olympic Highway and Gobbagombalin Bridge would be cleared after each traffic light cycle in peak times. Transport consulted with emergency services (briefing 18 October 2021) during the REF display period regarding potential access restrictions on the Gobbagombalin Bridge when attending an accident and advised traffic light phasing will prioritise the Olympic Highway traffic.

## Socio-economic and liveability: community safety

Of the submissions received, 11 per cent raised a concern regarding impacts to community safety, including:

- **Traffic incidents**
  - **Issue:** The proposal will not reduce the number of traffic incidents along Olympic Highway.
  - **Response:** The proposal aims to address these safety concerns by increasing the traffic capacity and network efficiency of both intersections. By including traffic lights at the intersections, drivers would not need to wait for safe gaps in traffic, minimising the need for drivers to make decisions on when to cross oncoming traffic on the Olympic Highway and the risk of poor driver behaviour.
- **Traffic signals and cameras**
  - **Issue 1:** Request for traffic signals alerting oncoming traffic (especially heavy vehicles) of red lights at Travers Street and Old Narrandera Road, which would avoid rear end collisions.
  - **Issue 2:** Request for mobile phone detection cameras and red light cameras to reduce the risk of incidents.
  - **Response:** Traffic signal warning signs will be installed in advance of traffic signals to warn road users of the approaching traffic lights. Mobile phone detection cameras, fixed speed cameras and red-light cameras are not proposed to be installed as part of this proposal.

## Additional assessments

### Aboriginal cultural assessment

Following feedback during the submissions period, an Aboriginal Cultural Values Assessment Report (ACVAR) was carried out by Waters Consultancy Pty Ltd (Waters Consultancy) to assess the proposals potential impacts has on intangible Aboriginal cultural values.

The Aboriginal cultural values assessment was carried out through consultation with First Nations cultural knowledge holders, as identified by the Registered Aboriginal parties (RAPs), to record historical and cultural values within the proposal area. Documentary research and historical analysis was also carried out to support and contextualise the Aboriginal cultural values assessment. The process was consistent with the Heritage NSW cultural heritage assessment guidelines (NSW Office of Environment and Heritage, 2011).

The surrounding landscape is one that is rich in cultural value with a range of locations identified as holding cultural significance. These locations include important resource areas, Story or Dreaming Paths, ceremonial grounds, ring trees, burial trees, movement corridors (pathways), men's business places, women's business places, and traditional and historical living places. The cultural knowledge holders and RAPs identified concerns regarding the impact of works on the ecosystems within the proposal area and beyond.

The ACVAR recommended a range of cultural heritage safeguards and site-specific safeguards to be implemented throughout the construction and operation of the proposal, which have been incorporated in the revised safeguards and mitigation measures for the proposal. These are designed to protect Aboriginal cultural heritage values within the proposal footprint from unintended impacts and to provide appropriate mitigation measures to record and respect Aboriginal cultural heritage values where impact will occur.

### Biodiversity assessments

Following feedback during the submissions period, as well as confirmation of detailed design for the proposal, several biodiversity assessments and reports were developed, including:

- Artificial Shelter Management Strategy for hollow dependent fauna
- Supplementary Environmental Assessment for additional Ancillary Sites not previously identified in the REF
- Flora and Fauna Management Plan (forms part of the Construction Environment Management Plan (CEMP)).

The proposed works for establishing the additional ancillary facilities would require modification of the understory vegetation within the study area, including stripping of and incidental impact to topsoil, grasses, forbs, small shrubs and juvenile trees in order to facilitate the construction of a suitable hardstand area and placement of site sheds. Two planted native canopy trees (*Casuarina cunninghamia*) are within the proposal area (ON12 west of Boorooma Street). Transport will avoid works that would require their removal.

An Artificial Shelter Management Strategy was developed to mitigate impacts to hollow dependent fauna that may be displaced as a result of habitat clearance. Additionally, a draft Flora and Fauna Management Plan (FFMP) has been prepared to outline measures to minimise and manage biodiversity impacts, while ensuring compliance with relevant development approval requirements relating to ecological impacts. This FFMP will form an appendix to the Construction Environment Management Plan (CEMP) when works commence.

### **Noise and vibration assessment**

Following feedback during the submissions period, Umwelt developed an addendum to the previously prepared Umwelt report, 'Olympic Highway Intersection Upgrades Noise and Vibration Impact Assessment Final August 2021' (NVIA 2021). This addendum addressed potential traffic noise impacts along Gardiner Street as part of the proposal.

It was found that the predicted traffic noise levels either comply with the criteria (night-time and 2026 daytime) or are below the 2dB increase threshold of the NSW Road Noise Policy (Department of Environment, Climate Change and Water, 2011) (2036 daytime).

In accordance with the NSW Road Noise Policy, the project traffic noise levels along Gardiner Street are predicted to be acceptable and have minor impact. As such, no additional safeguards or management measures have been recommended for the proposal.

### **Soil and water assessments**

Following confirmation of detailed design for the proposal, several assessments and reports were developed for water and soils, including:

- Stage 2 Contamination Detailed Site Investigation
- Justification Report for No Stormwater Detention Basin
- Risk Assessment for No Spill Basin
- Soil and Water Quality Management Plan.

A Stage 2 Contamination Detailed Site Investigation was prepared by DM McMahon Pty Ltd to identify the nature of the potential contamination associated with the proposal and delineate its lateral and vertical extent to a sufficient degree that appropriate site management strategies can be devised, if required. The proposal site has a historical agricultural and commercial land use. The potential contamination sources are persistent material and chemicals that may have accumulated in the fill material and natural soil from previous land uses. The results of the investigation concluded that the identified historical potential contaminating land use is assessed to be of low significance in terms of risk to future site users and the site is suitable for the development of the proposal.

A Justification Report for no Stormwater Detention Basin was prepared by Umwelt (December 2022) to inform Transport if a detention basin is required for the proposal. The assessment investigated whether the area of new pavement for the Old Narrandera Road and the Travers Street intersection upgrades increased stormwater runoff, subsequently requiring the installation of a detention basin for the proposal. It was found that the increase in the total pavement area is not considered to have an adverse effect on the receiving stormwater drainage system and surrounding environment.

Additionally, an assessment was carried out to determine whether a spill basin is required for the proposal. There are no spill containment measures in place at the existing Old Narrandera Road or Travers Street intersections. The assessment concluded that by improving road safety through the development of the proposal, and simplifying traffic flow within and surrounding the intersections, the risk of a spill occurring would be reduced. Consequently, and considering the minor nature of the proposed works, it is deemed not necessary to implement spill containment measures.

A Soil and Water Quality Management Plan (SWQMP) was developed, which includes erosion and sediment controls for all stages of the construction of the proposal, to mitigate any potential soil and water quality impacts. This SWQMP will form an appendix to the Construction Environment Management Plan (CEMP) when works commence.

## Next steps

Transport 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 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 before and during the construction phase.

# Introduction and background

## The proposal

Transport for NSW is proposing to upgrade the Olympic Highway intersections with Old Narrandera Road and Travers Street in Wagga Wagga (Figure 1). The Old Narrandera Road intersection is located north of Gobbagombalin Bridge over the Murrumbidgee River, next to the northern Wagga Wagga suburb of Estella (Figure 2). The Travers Street intersection is located south of Gobbagombalin Bridge near the Wagga Wagga city centre (Figure 3). The proposal would improve road safety at both intersections, access between growth areas and services in Wagga Wagga, travel times, and support future residential growth in the area.

Key features of the proposal would include:

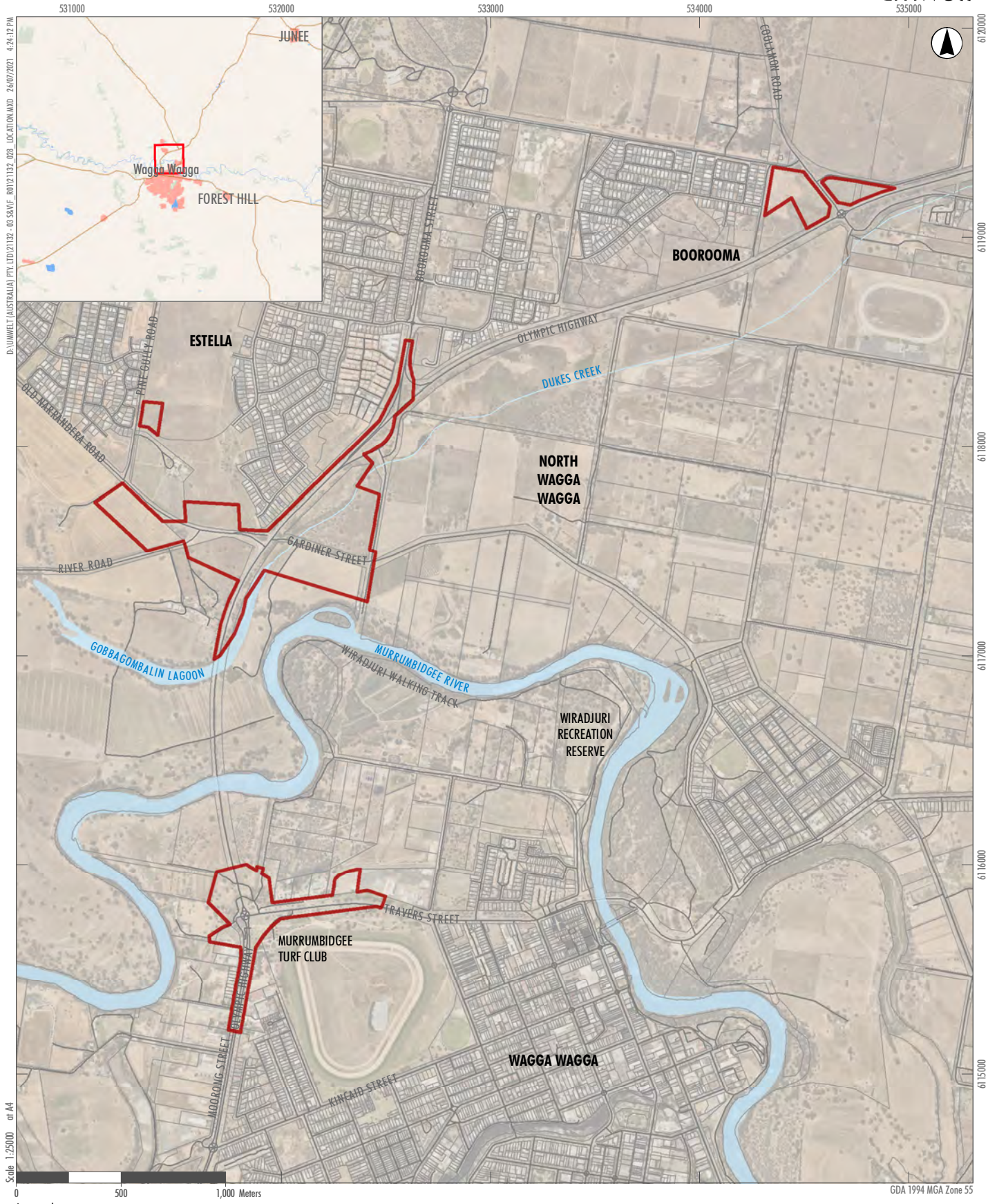
- **at the Old Narrandera Road intersection:**
  - building a second right turn lane for traffic exiting Old Narrandera Road onto the Olympic Highway
  - extending the current Boorooma Street ramp to form a second southbound through lane on the Olympic Highway, merging south of the intersection
  - retaining the current right-turn lane from the Olympic Highway into Old Narrandera Road
  - retaining the current left-turn slip lane from the Olympic Highway into Old Narrandera Road
  - installing traffic lights at the intersection of Old Narrandera Road and the Olympic Highway, and associated utility connections
  - potentially constructing a second northbound through lane on the Olympic Highway from Old Narrandera Road to Boorooma Street exit
  - acquiring property in the south-western corner of the intersection
  - extending existing culverts under the Olympic Highway and Old Narrandera Road
  - removing 1.93 hectares (ha) of native vegetation, including up to 0.11 ha of a threatened ecological community and 12 hollow-bearing trees (HBTs)
  - carrying out general construction activities, including relocation of existing utilities
  - retaining construction access tracks permanently to provide future safe access for inspecting and maintaining the road, traffic signals and utilities.
- **at the Travers Street intersection:**
  - relocating the intersection about 80 metres south of the existing roundabout to allow for two southbound lanes on the Olympic Highway
  - building about 200 metres of new road to realign Travers Street
  - installing traffic lights at the new intersection and associated utility connections
  - reconfiguring Olympic Highway lanes at the new intersection to include turning lanes into Travers Street
  - changing the Moorong Street northern connection onto the Olympic Highway to create a left-in left-out arrangement
  - building a northbound right turning lane into Travers Street

- changing Olympic Highway northbound lanes south of the Travers Street intersection, with traffic to merge into a single lane before the intersection and new right turning lane
- removing 1.03 ha of native vegetation (none of which is a threatened ecological community), including five hollow-bearing trees
- removing the roundabout and existing Travers Street connection to the Olympic Highway
- increasing the headwall and wingwall height and installing traffic barriers of the horse underpass culvert at the Olympic Highway
- changing the horse pathway on both sides of the Olympic Highway horse underpass culvert, including relocating the pathway and installing fences
- providing driveway access and parking on the old Travers Street road surface for the Wiradjuri Walking Track
- potentially relocating temporarily and/or widening the Wiradjuri Walking Track under Gobbagombalin Bridge
- carrying out general construction activities, including relocating existing utilities.

A more detailed description of the Olympic Highway intersection upgrades is found in the *Olympic Highway Intersection Upgrades - Review of Environmental Factors* prepared by Transport in September 2021, which can be accessed through this link:

[roads-waterways.transport.nsw.gov.au/projects/01documents/olympic-highway-intersection-upgrades/olympic-highway-intersection-upgrades-review-of-environmental-factors-09-2021.pdf](https://roads-waterways.transport.nsw.gov.au/projects/01documents/olympic-highway-intersection-upgrades/olympic-highway-intersection-upgrades-review-of-environmental-factors-09-2021.pdf).





- Legend**
- Proposal Area
  - Property Boundaries
  - Roads
  - ~ Watercourses

**FIGURE 1**  
Location of the Proposal



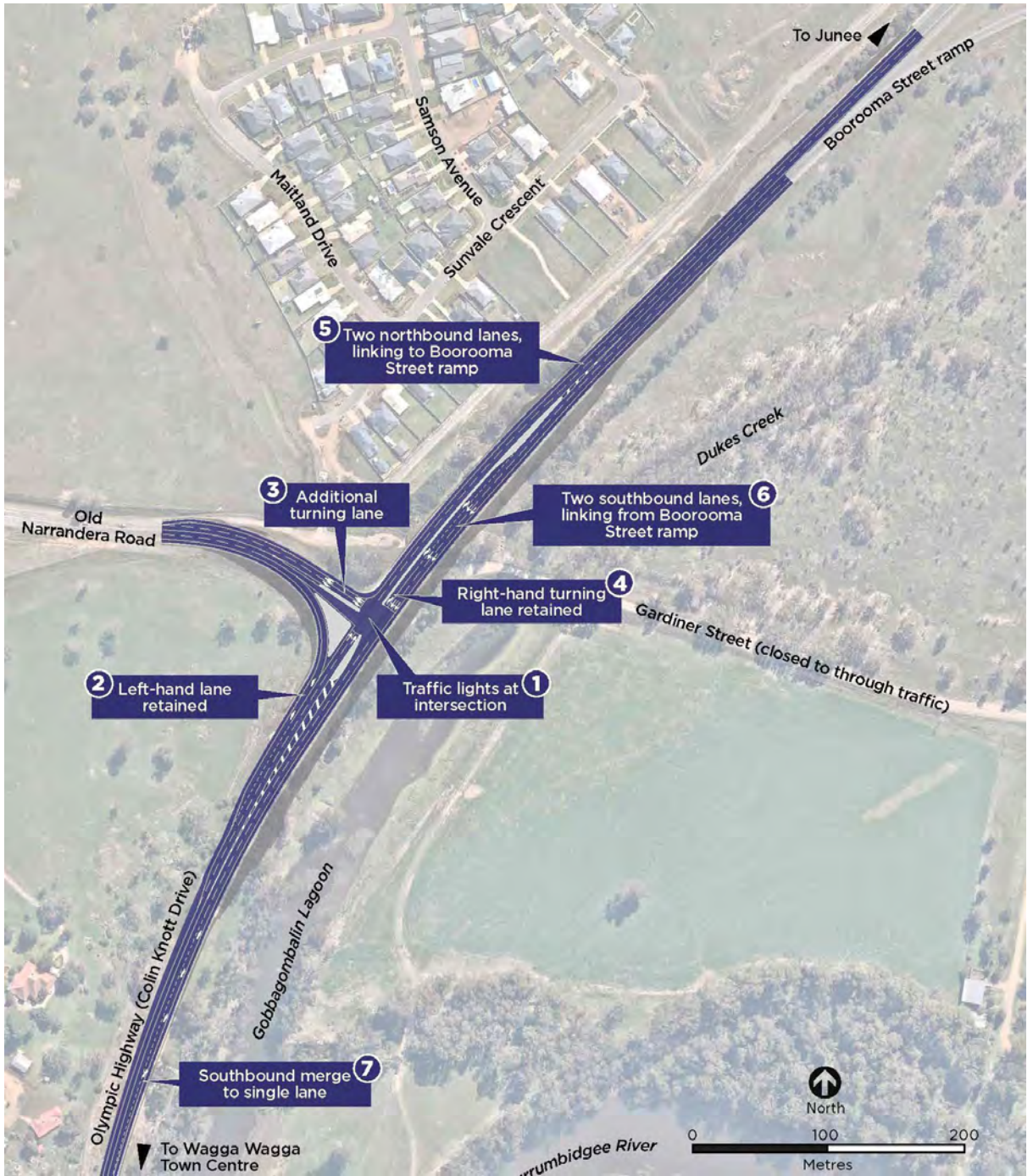


Figure 2: Old Narrandera Road concept design

Source: Olympic Highway Intersection Upgrades - Old Narrandera Road Concept Design (Transport for NSW, 2021)



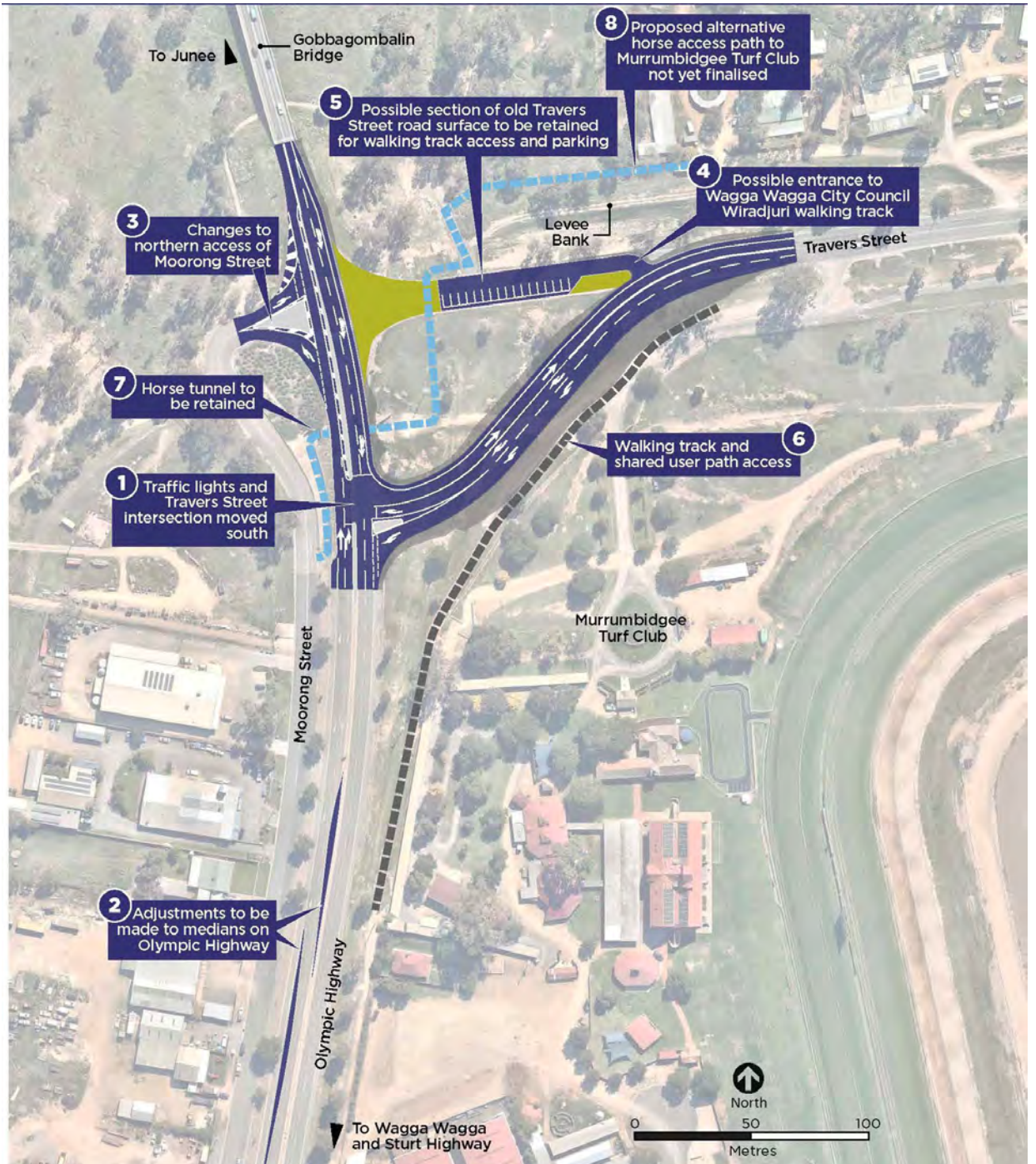


Figure 3: Travers Street concept design

Source: Olympic Highway Intersection Upgrades - Travers Street Concept Design (Transport for NSW, 2021)

## REF display

Transport prepared a review of environmental factors (REF) to assess the potential environmental impacts of the proposed works. The REF was publicly displayed for 33 days between 20 September 2021 and 22 October 2021. The REF was placed on Transport's project website and made available for download. Four social media posts were featured via NSW Road's Facebook page during the REF display period.

Due to COVID-19 restrictions, no printed copies were publicly displayed. However, Transport provided the option for a hard copy version of the REF on request to anyone unable to view the document online. In addition, Transport established a digital engagement room so the community could view project documents such as poster boards, videos containing proposal information, a copy of the REF and frequently asked questions, and provide direct feedback via this portal.

In addition to the above public display, an invitation to comment and copy of the review of environmental factors was sent directly to Wagga Wagga City Council, the Wagga Wagga Police (Highway Patrol) and a local bus services provider (Appendix 1).

Partial acquisition of one property may be required for the proposal (Lot 51/1106511). Transport is undertaking ongoing consultation with the affected property owner.

Following the REF display period and receipt of submissions from stakeholders and the community, consultation was carried out with Registered Aboriginal Parties (RAPs) and First Nations cultural knowledge holders during the Aboriginal cultural heritage assessment for the proposal.

## Purpose of the report

This submissions report relates to the REF prepared for the Olympic Highway intersection upgrades 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 summarises the issues raised and provides responses to each issue. It details investigations carried out since finalisation of the REF and describes new or revised environmental management measures.

No changes to the design are proposed that would require the preparation of a preferred infrastructure report. Revisions have been made to the assessment with the inclusion of an Aboriginal cultural heritage assessment. The recommendations from this assessment have been included in the revised environmental management measures for the Olympic Highway intersection upgrades REF.

## Response to issues

Transport received 79 submissions, accepted up until 22 October 2021. Appendix 1 lists the respondents and each respondent's allocated submission number. Appendix 1 also indicates where the issues from each submission have been addressed in this report.

Additionally, 76 comments were received on the four social media posts featured via NSW Road's Facebook page during the submissions period. These comments were considered in the revised environmental mitigation and management measures for this report; however, they were not included in Appendix 1 as formal submissions.

### Overview of issues raised

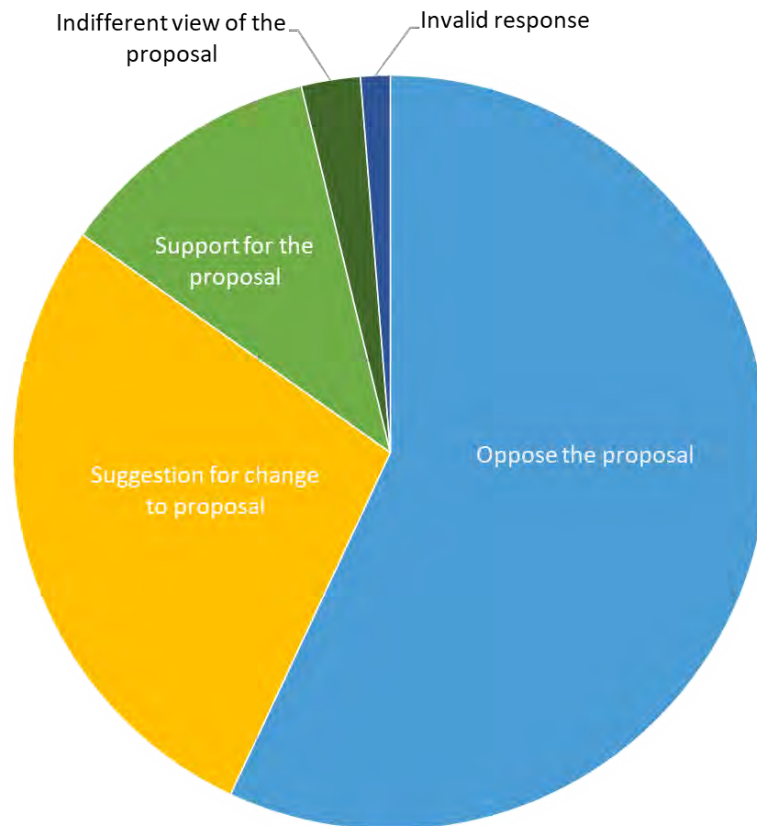
A total of 79 submissions were received in response to the display of the REF. This included one submission from Wagga Wagga City Council, two submissions from an Independent Member for Wagga Wagga, six submissions from local businesses, service providers and associations, and 70 submissions from individuals of 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 response to these issues forms the basis of this section.

Of the 79 submissions, 11 per cent showed support for the proposal, 57 per cent opposed the proposal, 28 per cent offered suggestions to improve the proposal, 3 per cent were indifferent and 1 per cent provided an invalid response (refer to Figure 4).

The majority of submissions were submitted online, with 58 submissions received via Transport's Digital Engagement Room. Thirteen submissions were sent to the project email address and eight submissions were received over the telephone.

## OVERVIEW OF SUBMISSIONS RECEIVED



**Figure 4: Overview of submissions received**

Wagga Wagga City Council expressed the following concerns regarding the proposal:

- **REF display**
  - the timeframe to respond to the display of the REF was inadequate to thoroughly review the documents and provide a written response.
- **proposal design**
  - does not support the proposed installation of traffic signals at Old Narrandera Road intersection and Travers Street intersection
  - recommends grade separation works at each intersection in the short term (1-5 years) and duplication of Gobbagombalin Bridge in the medium term (5-15 years)
    - suggests future additional overpass of highway at Old Narrandera Road to access Gardiner Street
  - some councillors do not support the proposed left-in, left-out arrangement at Moorong Street, even with the inclusion of a u-turn bay for heavy vehicles.
- **access and connectivity**
  - concerns for equine access at the Travers Street intersection. Consideration should be given to grade separation works at this intersection, in order to reduce the safety risks associated with horses accessing the Murrumbidgee Turf Club.

- **traffic and transport**

- suggests the proposal will redirect traffic away from the State Road network and onto the local road network, thereby straining the traffic capacity of the local road system.
- request for further consideration of additional impacts on the local road network and detailed review by Wagga Wagga City Council.
- request for clarification on traffic modelling and predictions, including:
  - Gardiner Street traffic modelling
  - evidence and clarification on the predicted network efficiency with the introduction of the proposal
  - clarification on the Northern Growth Area traffic growth rates.
- concerns regarding the Travers Street lane configuration for merging traffic.
- concerns regarding traffic congestion at the Pearson Street roundabout.

- **consultation**

- a formal presentation was requested to discuss the recommendations and findings of the REF.
- as the proposal will impact flood liable land, consultation is required with NSW State Emergency Service (SES) and Wagga Wagga City Council under *clause 15 of the State Environmental Planning Policy (Infrastructure) 2007 (ISEPP)*.
- as the proposal will strain the local road network, consultation with council is required under clause 13 of the ISEPP.

- **use of Council Land**

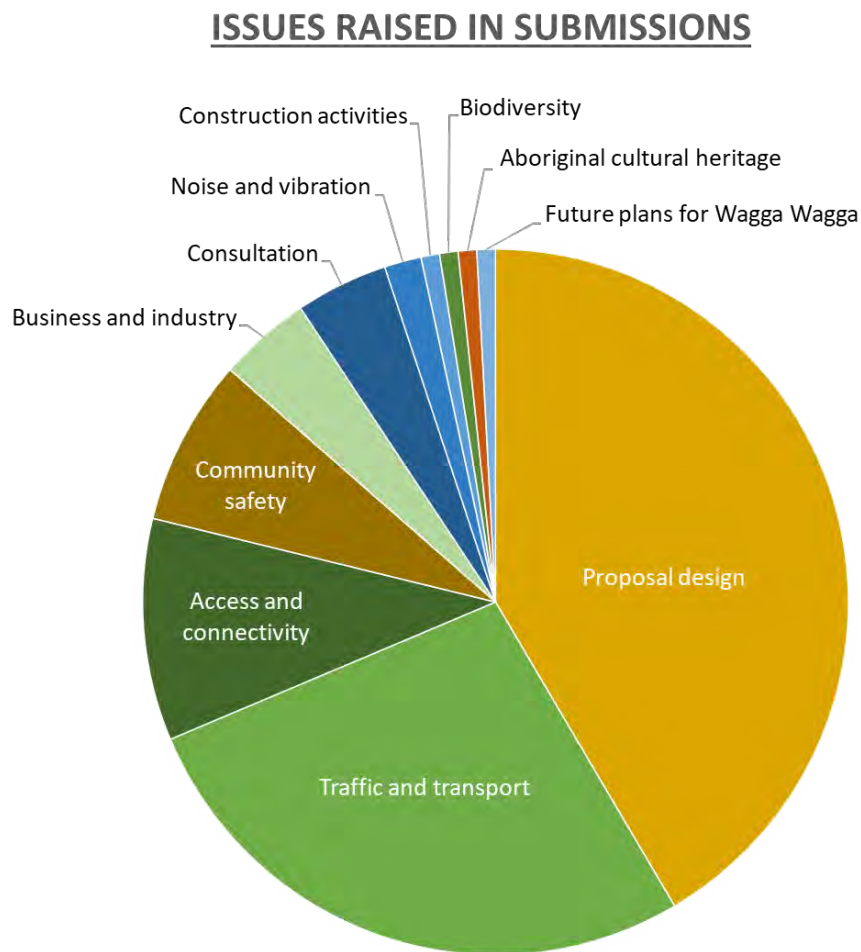
- receipt of Transport using council-owned land (identified as ON1 and ON8 in the REF) provided appropriate environmental protection measures are implemented and relevant approvals are obtained.

Submissions from service providers, local businesses, associations and individuals generally raised concerns regarding the following:

- proposal design
- traffic and transport
- socio-economic and liveability: access and connectivity
- socio-economic and liveability: community safety
- socio-economic and liveability: business and industry
- consultation
- Aboriginal cultural heritage
- biodiversity
- noise and vibration
- construction activities
- future plans for Wagga Wagga.



Figure 5 illustrates the key issues listed above that were raised in the submissions received for the proposal. Notably, 49 submissions raised concerns or suggestions regarding the proposal design and 32 submissions raised concerns regarding traffic and transport impacts.



**Figure 5: Overview of issues raised in submissions for the proposal**

## Proposal design

### Expansion of Gobbagombalin Bridge

#### *Submission numbers*

3, 15, 18, 19, 22, 23, 24, 26, 27, 30, 32, 34, 38, 39, 46, 50, 52, 55, 58, 64, 67

#### *Issue description*

21 submissions suggested the following change to proposal design:

- Gobbagombalin Bridge needs to be duplicated to two lanes in each direction to relieve current and future traffic congestion along the bridge.

#### *Response*

Duplication of Gobbagombalin Bridge may be considered in the longer term; however, it is out of scope for this proposal. The duplication of Gobbagombalin Bridge has been identified as a future development opportunity in the Wagga Wagga Transport Plan (discussed further below). The proposal has been designed to facilitate the duplication of Gobbagombalin Bridge in the future.

The proposed design solution is short to medium term focused and is based on the intersection modelling carried out as part of the proposal. The intersection modelling was carried out by Transport and indicates Gobbagombalin Bridge is not currently over capacity at any time. Acceptable operation of Gobbagombalin Bridge will be maintained between 2026 and 2036, based on current Wagga Wagga growth rates.

The Wagga Wagga Transport Plan prepared by Transport and developed in collaboration with Wagga Wagga City Council and other stakeholders, commits to investigating the road network in Wagga Wagga. In the next five years, Transport will investigate duplicating Gobbagombalin Bridge to ensure it meets future travel demand.

The full Wagga Wagga Transport Plan was finalised in 2022 and can be found at this link:

[future.transport.nsw.gov.au/future-transport-plans/wagga-wagga-transport-plan](https://future.transport.nsw.gov.au/future-transport-plans/wagga-wagga-transport-plan).

## Roundabouts at both intersections

### *Submission numbers*

13, 35, 42, 43, 51, 54, 66, 70, 74, 76

### *Issue description*

10 submissions suggested the following changes to proposal design:

- roundabouts are preferred over traffic lights at the Travers Street and Old Narrandera Road intersections
- the existing roundabout at the Travers Street intersection should be upgraded to a larger roundabout
- the Old Narrandera Road intersection should be upgraded to include a roundabout.

### *Response*

An options assessment was initially carried out by Transport for the proposal to determine the preferred option. The options assessment considered the following proposal objectives for both intersections:

- improve road safety
- improve access between the northern growth areas and services in Wagga Wagga
- improve travel time and reduce delays for commuters and freight travelling on this section of the Olympic Highway
- support future residential growth in the Wagga Wagga area.

After a series of options refinement workshops and traffic modelling, the following options were shortlisted as best meeting the proposal objectives:

- **Old Narrandera Road options**
  - traffic signals with additional lane capacity
  - roundabout with highway southbound bypass lane
  - three-leg standard roundabout
  - elevated right turn.
- **Travers Street options**
  - traffic signals with intersection relocated south
  - large radius roundabout with two lanes
  - priority controlled with no right turn from Travers Street.



The preferred option was selected as it reduces traffic congestion along Olympic Highway, increases network efficiency by providing additional capacity, whilst also improving road safety. This option was considered to be the most sustainable option as it would likely limit the need for further work to the Old Narrandera Road and Travers Street intersections over the next few decades, thereby resulting in overall cost savings, reduced environmental impacts, and less disruption to road users. In addition to meeting the overarching proposal objectives, the preferred option represents good value for money.

Additionally, the preferred option facilitates the duplication of Gobbagombalin Bridge in the future.

The full *Olympic Highway Intersection Upgrades - Preferred Options Report* prepared by Transport can be found at the following link:

[roads-waterways.transport.nsw.gov.au/projects/01documents/olympic-highway-intersection-upgrades/olympic-highway-preferred-options-report-2020-07.pdf](https://roads-waterways.transport.nsw.gov.au/projects/01documents/olympic-highway-intersection-upgrades/olympic-highway-preferred-options-report-2020-07.pdf)

## Grade separation works

### *Submission numbers*

1, 3, 16, 18, 29, 33, 41, 44, 68, 69

### *Issue description*

10 submissions suggested the following changes to proposal design:

- an interchange at Travers Street and Old Narrandera Road would be a long-term solution
- suggestion for an overpass or underpass from Old Narrandera Road, which would allow traffic and heavy vehicles to move more freely, while minimising traffic congestion along Olympic Highway and Gobbagombalin Bridge
- suggestion for an underpass from Travers Street going underneath Gobbagombalin Bridge, looping around to a slip lane travelling north along Olympic Highway, which would reduce traffic congestion along Gobbagombalin Bridge
- a grade separation crossing at the Travers Street intersection would provide safe access for horses associated with the Murrumbidgee Turf Club
- request for grade separated intersection at Old Narrandera Road with a view for future construction of an additional overpass of highway at Old Narrandera Road to access Gardiner Street.

### *Response*

As discussed previously, an options assessment was initially carried out by Transport for the proposal to determine the preferred option.

The preferred option was selected as it reduces traffic congestion along Olympic Highway, increases network efficiency by providing additional capacity, whilst also improving road safety. This option was considered to be the most sustainable option as it would likely limit the need for further work to the Old Narrandera Road and Travers Street intersections over the next few decades, thereby resulting in overall cost savings, reduced environmental impacts, and less disruption to road users.

A grade separated interchange, underpass or overpass would not meet the objectives for the proposal, including allowing for future upgrades of Gobbagombalin Bridge and maximising value for money.

Transport has investigated a grade separated interchange option at the Old Narrandera Road intersection, but found it was not a viable or safe engineering solution because the distance between this intersection and the existing Boorooma Street overpass and Gobbagombalin Bridge does not allow for safe merging.

Transport has also investigated a grade separated interchange at the Travers Street intersection and found such works have the potential for:

- reduced safety due to uncontrolled intersections and poor sight distance
- reduced efficiency and level of service from queuing and fewer gaps in traffic
- harder wayfinding from non-intuitive travel paths
- concerns with clearance, space and storage of heavy vehicles
- insufficient allowance for pedestrians, cyclists and horses
- unsuitable design geometry with associated speed reductions
- risk of flood prone land and stormwater drainage
- lower flexibility for potential future duplication.

Additionally, building an underpass on a floodplain was not a good option, due to the associated safety risks during flood events. It would also cause a significant amount of traffic closures and delays while being built.

An overpass at Old Narrandera Road was discounted as a potential option, as there is limited space between Boorooma Street ramp and Gobbagombalin Bridge.

Transport notes the current proposal is a short to medium-term solution, with opportunity for future upgrades available. Transport is currently carrying out a strategic study of arterial road corridors in north Wagga, and is committed to working with Council to investigate an overall solution that improves connectivity between the CBD and the city's northern suburbs in the medium to long-term.

The full *Olympic Highway Intersection Upgrades - Preferred Options Report* prepared by Transport can be found at the following link:

[roads-waterways.transport.nsw.gov.au/projects/01documents/olympic-highway-intersection-upgrades/olympic-highway-preferred-options-report-2020-07.pdf](https://roads-waterways.transport.nsw.gov.au/projects/01documents/olympic-highway-intersection-upgrades/olympic-highway-preferred-options-report-2020-07.pdf)

### **Travers Street intersection design**

#### *Submission numbers*

4, 5, 10, 29, 33, 57, 59, 60, 65, 67, 73

#### *Issue description*

11 submissions suggested the following changes to proposal design:

- the existing left-turn lane into Travers Street from Gobbagombalin Bridge should remain. This could be a slip road for traffic travelling southbound along Olympic Highway onto Travers Street. This would improve traffic flow along Olympic Highway and minimise traffic congestion along Gobbagombalin Bridge, while providing fast access into the Wagga Wagga CBD
- there is a concern heavy vehicles turning left onto Travers Street from Olympic Highway (when travelling southbound) will not have enough space to turn without encroaching into the opposite lane.

#### *Response*

As the proposal will relocate the existing Travers Street intersection south, the existing left-hand turning lane will be removed to facilitate the proposed design. The proposal includes a left and through lane at the upgraded Travers Street intersection for southbound traffic exiting the Olympic Highway onto Travers Street. The left-turn from Olympic Highway into Travers Street is green on two out of three phases at the traffic lights and is red only when the right turn from Olympic Highway into Travers Street is green.

The Travers Street intersection has been designed to accommodate the B-double vehicles turning paths without encroaching the opposite lane.

### **Old Narrandera Road intersection design**

#### *Submission numbers*

10, 52, 67

#### *Issue description*

Three submissions suggested the following changes to proposal design:

- the proposal should retain the left-turn lane from Old Narrandera Road onto Olympic Highway. This can be used as a slip road
- the proposal should include a left-turn slip lane from Olympic Highway travelling northbound onto Old Narrandera Road
- the right-turn lane from Old Narrandera Road onto Olympic Highway should have adequate room provided for vehicles to turn and be marked with a turning line
- there is a concern heavy vehicles turning right onto Old Narrandera Road from Olympic Highway (when travelling southbound) will not have enough space to turn without driving over the median strip.

#### *Response*

The proposal includes an additional turning lane from Old Narrandera Road onto the Olympic Highway.

The current left-turn slip lane from Olympic Highway travelling northbound onto Old Narrandera Road will be retained, and the proposal includes construction of a second northbound through lane on the Olympic Highway from Old Narrandera Road to Boorooma Street exit.

The Old Narrandera Road intersection has been designed to accommodate the B-double vehicles turning paths without driving over a median strip.

### **Changes to Moorong Street access**

#### *Submission numbers*

14, 18, 52, 79

#### *Issue description*

Four submissions raised the following concerns and changes to the proposal design:

- the left-turn only option to exit Moorong Street from the northern end forces traffic to travel north for several kilometres before having the option of turning around to travel south
- a small roundabout or loop road at the northern end of Moorong Street would give vehicles the option to turn around and travel south along Moorong Street to exit at Kincaid Street
- a dedicated turning lane to access the northern end of Moorong Street from Olympic Highway (travelling southbound) would provide efficient access to businesses along Moorong Street
- some opposition to the left-in, left-out arrangement at Moorong Street, despite the proposed u-turn bay.

#### *Response*

Following feedback from the community, Transport changed the northern Moorong Street design. The change includes a u-turn bay, removing conflicts of traffic turning across the highway at this location, which will improve safety. Access via Kincaid Street will remain, which would result in about two extra minutes of travel from Gobbagombalin Bridge to the northern end of Moorong Street.

## Improvements to existing roads

### *Submission numbers*

32, 58

### *Issue description*

Two submissions suggested the following changes to proposal design:

- the existing roads need to be upgraded to be in better condition
- the potholes at the Old Narrandera Road and Pine Gully Road intersection need to be repaired.

### *Response*

Upgrades and repairs to existing roads is outside the scope of the proposal. Wagga Wagga City Council are proposing to make improvements to Pine Gully Road from the Old Narrandera Road intersection as part of the Pine Gully Road Upgrade Project. Transport will continue consulting with council and raise these concerns for their action.

The description of project elements for the Pine Gully Road Upgrade can be found at the following link:

[wagga.nsw.gov.au/projects/pine-gully-road-upgrade](http://wagga.nsw.gov.au/projects/pine-gully-road-upgrade)

## Upgrades to the Pearson Street / Sturt Highway intersection

### *Submission numbers*

1, 52

### *Issue description*

Two submissions suggested the following change to proposal design:

- there should be a dedicated left-turn lane from Olympic Highway onto Edward Street
- there should be a dedicated left-turn lane from Sturt Highway onto Olympic Highway to access Gobbagombalin Bridge
- the Pearson Street and Sturt Highway intersection will be difficult for heavy vehicles to use. It should be straightened to ensure a smoother flow of traffic.

### *Response*

Upgrade of the Olympic Highway / Edward Street / Pearson Street intersection is out of scope for the proposal.

The *Wagga Wagga Transport Plan* prepared by Transport and developed in collaboration with Wagga Wagga City Council and other stakeholders, provides planning to improve the transport network. This plan includes initiatives to support traffic along Edward Street, Pearson Street and Sturt Highway, including a potential northern link road.

The full Wagga Wagga Transport Plan (finalised in 2022) can be found at this link:

[future.transport.nsw.gov.au/future-transport-plans/wagga-wagga-transport-plan](http://future.transport.nsw.gov.au/future-transport-plans/wagga-wagga-transport-plan).

## Changes to the horse pathway

### *Submission numbers*

27, 52

### *Issue description*

Two submissions suggested the following changes to proposal design:

- the horse pathway is clumsy for horses to use. The proposed changes to the horse pathway needs to be revisited

- the Travers Street traffic lights should be moved to where the existing horse pathway is located. The horse pathway should be removed.

*Response*

The proposal would redirect the existing horse pathway used to access the Murrumbidgee Turf Club (MTC) and install fencing or similar measures to assist in controlling the risk of horses bolting. Transport is continuing to consult with the affected stakeholders, particularly the MTC, regarding options to manage these impacts.

## Traffic and transport

### Traffic lights are ineffective

*Submission numbers*

7, 12, 15, 16, 19, 20, 30, 31, 32, 33, 36, 40, 44, 49, 66, 70, 75

*Issue description*

17 submissions raised the following concern:

- traffic lights will not solve the issue regarding traffic congestion along Olympic Highway.

*Response*

An options assessment was carried out for the proposal to understand what design option would have the best outcomes for the road network, in terms of safety and efficiency. The full *Olympic Highway Intersection Upgrades - Preferred Options Report* prepared by Transport can be found at the following link:

[roads-waterways.transport.nsw.gov.au/projects/01documents/olympic-highway-intersection-upgrades/olympic-highway-preferred-options-report-2020-07.pdf](https://roads-waterways.transport.nsw.gov.au/projects/01documents/olympic-highway-intersection-upgrades/olympic-highway-preferred-options-report-2020-07.pdf)

Extensive traffic modelling was also carried out to understand the existing conditions of the proposal area, which is a computer simulation based on actual counts and surveys of the existing traffic in the proposal area.

The proposed traffic signals and modified intersection configurations are expected to improve the road safety. Traffic delays may increase slightly for vehicles travelling between northern suburbs and the town centre (up to one-minute extra travel time in 2036), as the two intersections will require vehicles to stop if the signals are red. However, traffic flow exiting Old Narrandera Road and Travers Street onto Olympic Highway is expected to improve.

While the proposal may result in some minor delays as a result of the traffic signals, it is expected to improve traffic flow across the network by assisting driver decision-making as to when to turn onto/off the Olympic Highway.

### Increased traffic due to residential growth

*Submission numbers*

16, 19, 32, 48, 64, 72, 73

*Issue description*

Seven submissions raised the following concerns:

- it is predicted residential areas in the outer suburbs of Wagga Wagga will grow substantially in the next 5 years, which would increase the traffic along Olympic Highway and Gobbagombalin Bridge
- traffic lights are a short-term solution, which will not solve the traffic congestion issue in the next 5 years
- a long-term solution for the current traffic congestion issue is needed given the proposed residential growth outlined in the Wagga Wagga Special Activation Precinct's master plan

- the timeline for constructing the proposal is too long, as the traffic congestion is getting worse with residential growth in the area (further discussed in 'Construction activities' of this section).

*Response*

Traffic modelling for the existing Old Narrandera Road and Travers Street intersections indicates both intersections will operate at unacceptable levels of service in future years.

The proposal aims to address existing traffic congestion issues at the Old Narrandera Road and Travers Street intersections of the Olympic Highway and minimise future issues that arise due to growth in the Wagga Wagga area, whilst also addressing road safety concerns. One of the objectives for the proposal was to deliver a project enabling flexibility for future additional capacity to support traffic growth from continued industrial and residential development in Wagga's Northern Growth Area and Special Activation Precinct.

The proposal aims to relieve congestion along the Olympic Highway and support the expected residential, commercial and industrial growth in Wagga Wagga through increased traffic capacity and network efficiency through the two intersections.

### **Trial using temporary traffic lights**

*Submission numbers*

3, 6, 78

*Issue description*

Three submissions provided the following suggestion:

- request for a trial of the proposal using temporary traffic lights, in order to assess the effectiveness traffic lights in improving traffic flow along Olympic Highway.

*Response*

As the proposal includes changes to the existing Old Narrandera Road and Travers Street intersections, including through lanes and turning lanes, as well as intersection treatments, temporary trial of traffic lights would not provide a realistic assessment of the use of traffic lights at the existing intersections.

In particular, at the Travers Street intersection, the proposal includes relocation of this intersection further south, which provides extended departure lanes off Gobbagombalin Bridge, as well as the replacement of the roundabout with traffic signals.

Additionally, full access is currently in place for Moorong Street (i.e., traffic can turn right out of northern Moorong Street via the Travers Street roundabout), which would be changed to left-in, left-out only access when the proposal is in effect.

### **Merging on Olympic Highway**

*Submission numbers*

26, 55

*Issue description*

Two submissions raised the following concerns:

- southbound traffic will be merging over a short distance between the Old Narrandera Road traffic lights and Gobbagombalin Bridge, which may cause accidents
- too many lanes along Olympic Highway will have to merge before entering Gobbagombalin Bridge.

### *Response*

The proposal includes traffic lights which would greatly improve intersection safety and reduce risks taken by drivers to enter the Olympic Highway off Old Narrandera Road. Traffic exiting Old Narrandera Road would not need to rely on visibility along the Olympic Highway to determine when it is safe to enter the highway and would not need to merge with vehicles travelling at speed along the highway.

The Olympic Highway southbound merging distance from the Old Narrandera Road traffic lights to Gobbagombalin Bridge has been designed to provide suitable merging opportunity in accordance with current road design standards.

The proposal involves removing existing merging lanes at the Travers Street intersection. The use of traffic lights and dedicated turning lanes for traffic entering and exiting Travers Street off the Olympic Highway means fewer decisions need to be made by drivers using the intersection, thereby improving intersection safety.

### **Left-in, left-out arrangement at Moorong Street**

#### *Submission numbers*

9, 18, 62, 72

#### *Issue description*

Four submissions raised the following concerns:

- there is no right-turn option at the northern end of Moorong Street to access central Wagga Wagga
- traffic will be redirected to the Kincaid Street intersection to access Travers Street, which will put pressure on residential roads
- traffic signs are needed at the northern end of Moorong Street to alert drivers of the new left-turn only access to Olympic Highway
- some opposition to the left-in, left-out arrangement at Moorong Street, despite the proposed u-turn bay.

#### *Response*

The preferred option includes access changes to the northern intersection of Moorong Street and the Olympic Highway to left-in, left-out. This change will remove conflicts of traffic turning across the highway at this location, which will improve safety. Full access to Moorong Street will be maintained via Kincaid Street, as the preferred option only prevents some movements, and does not block off Moorong Street completely (sourced from FAQ, Transport for NSW 2020b).

Investigations found retaining the right turn into Moorong Street would create queues on Gobbagombalin Bridge due to traffic slowing down sooner to approach Travers Street. These queues would delay traffic reaching the intersection and reduce the efficiency of the traffic light cycles. The aim of moving the traffic lights further away from the bridge is to gain maximum storage capacity by providing a clean run off Gobbagombalin Bridge to get maximum traffic through the intersection, minimising queuing back along the bridge. If the right turn into Moorong Street were retained, there may be temptation for traffic to illegally access the southbound lanes of the highway from Moorong Street at that location.

Transport will ensure the wider community is informed of changed traffic requirements, such as left-in, left-out movements, through education campaigns and signage, once proposed changes are implemented (sourced from FAQ, Transport for NSW 2020b).

Transport will liaise with Moorong Street businesses about suitable signage to inform the community of changed business access, traffic requirements and wayfinding. This has been included as a new environmental safeguard in the 'Environmental management' section.

The distance from Travers Street to Kincaid Street is around one kilometre which would take around one minute to travel, which would result in around two extra minutes of travel from Gobbagombalin Bridge to the northern end of Moorong Street. From Moorong Street to Gobbagombalin Bridge there will be no extra travel time as a result of the intersection upgrades.

### **Traffic capacity at Gobbagombalin Bridge**

#### *Submission number*

67

#### *Issue description*

One submission raised the following concern:

- the prediction that traffic capacity along Gobbagombalin Bridge will be reached by 2040 should be addressed.

#### *Response*

Transport has carried out intersection modelling, which acknowledged traffic capacity restrictions from a single traffic lane crossing Gobbagombalin Bridge is an issue for both Old Narrandera Road and Travers Street intersections. Single lane capacity for Gobbagombalin Bridge is between 1600 and 1800 vehicles/lane/hour for acceptable operation. This is achieved, based on current growth, between 2026 and 2036.

Bridge capacity improvements are not included in the proposal's scope. Therefore, the options assessment carried out to identify the preferred intersection option needed to consider future growth, including allowing for additional intersection lane capacity and connections to other network links.

Transport has investigated several options for the upgrade of Old Narrandera Road and Travers Street intersections and found the proposal to be a viable solution for future duplication of Gobbagombalin Bridge.

### **Heavy vehicles using Olympic Highway**

#### *Submission numbers*

1, 15

#### *Issue description*

Two submissions raised the following concerns:

- heavy vehicles will have to stop and start frequently with the introduction of traffic lights
- traffic will be forced to slow down when heavy vehicles are coming to speed
- heavy vehicles exiting the northern end of Moorong Street to merge onto Olympic Highway may cause some drivers to panic.

#### *Response*

Traffic counts were carried out at five locations within the proposal area. This collected data on the number, speed and classification of vehicles travelling through Olympic Highway, Old Narrandera Road and Travers Street. Heavy vehicle numbers generally represent about 10 per cent of all vehicles in the proposal area on weekdays, with less on the weekends.

Traffic delays may increase slightly for vehicles travelling on Olympic Highway, as the intersection upgrades will require vehicles to stop if the signals are red. However, traffic flow exiting Old Narrandera Road and Travers Street onto Olympic Highway is expected to improve. While the proposal may result in some minor delays as a result of the traffic signals, it is expected to improve traffic flow by assisting driver decision-making as to when to turn onto/off the Olympic Highway.



## Traffic at the Pearson Street / Sturt Highway intersection

### *Submission numbers*

1, 18

### *Issue description*

Two submissions raised the following concern:

- there will be a bottleneck at the Pearson Street / Sturt Highway roundabout.

### *Response*

To assess whether the introduction of signals at the intersection of Old Narrandera Road and Travers Street along the Olympic Highway will have an adverse impact on the wider network, the traffic modelling carried out by Transport analysed additional intersections, including the Olympic Highway / Edward Street / Pearson Street intersection.

It was found the unsignalised roundabout at Olympic Highway / Edward Street / Pearson Street performs at a satisfactory level of service for all scenarios evaluated (including the proposal) for the morning and afternoon peak periods at both the 2026 and 2036 traffic volumes. There may be marginal increases in delay of 10-20 seconds, which is attributed to the increase in traffic demand for the 2026 and 2036 future years, resulting in slightly longer queues and congestion across the network.

## Traffic monitoring

### *Submission numbers*

10

### *Issue description*

One submission raised the following concern:

- request for traffic sensors to be installed to monitor traffic flow.

### *Response*

The proposal will include installation of CCTV to monitor traffic and manage peak hour flows.

## Traffic modelling

### *Submission numbers*

18, 67, 73

### *Issue description*

Three submissions raised the following concerns:

- the traffic modelling carried out for the REF appears unrealistic and does not adequately capture the peak traffic conditions currently or in 2036
- if traffic modelling was done for 8am to 9am, it would show cars travelling southbound from Gobbagombalin Bridge to the CBD
- traffic modelling for school pick up times (between 2.30pm and 4pm) would demonstrate the need for a dedicated exit off Travis Street and Old Narrandera Road (this is discussed further in the 'Proposal design' section)
- request for clarity on how the proposal will provide network efficiency, since traffic modelling indicates travel via Gardiner Street to be quicker

- provide commentary on the traffic modelling claims that the proposal creates efficiency: the model indicates greater delays to traffic
- request to provide clarification of northern growth area traffic numbers
- Travers Street lane configuration regarding traffic merging into a single lane northbound. It is preferred to have a dedicated right turn lane.

*Response*

The traffic modelling carried out by Transport used real time traffic survey data, which was collected and collated to understand current road network and traffic condition (refer to Appendix H of the REF). A summary of the data collected is provided in Table 1. This also included a review of 2019 survey data collected and analysed as part of the previous intersection modelling of Olympic Highway / Old Narrandera Road and Olympic Highway / Travers Street. In addition, traffic counts were also carried out using a pneumatic tube and radar, and video vehicle detectors. This collected data on the number, speed and classification of vehicles travelling through the proposal area.

**Table 1: Traffic data summary**

Data Type	Survey Dates	Survey Time
Origin Destination Survey	Tuesday 10 and Wednesday 11 November 2020	Two days 6am to 10am 3pm to 7pm
Intersection turning count	Saturday 7 to Friday 13 November 2020	Seven days 6am to 10am 3pm to 7pm
Travel Time Survey	Tuesday 10 and Wednesday 11 November 2020	Two days 6am to 10am 3pm to 7pm

Traffic data was collected for two peak travel times (between 8.00am and 9.00am, and between 3.15pm and 5.15pm), which highlighted the following key traffic conditions:

- commuting and school travel peaks coincide between 8.00am and 9.00am with the peak direction of travel being southbound along the Olympic Highway (towards Wagga Wagga city centre)
- the opposite was observed in the afternoon peak, where the peak direction of travel was northbound along the Olympic Highway and generally aligned with the school pick up period of 3.15pm to 4.15pm. In comparison to the morning peak, afternoon traffic volume profiles were generally flatter, spreading across multiple hours from 3.15pm to 5.15pm.

Future traffic demands were predicted for years 2026 and 2036. Future population and employment demographic growth was derived by calculating the estimated population and employment growth within the Wagga Wagga Region based on various sources, including the Department of Planning and Environment, Transport and Wagga Wagga City Council. This estimated growth was applied to the calibrated and validated base traffic model to develop future traffic demands as per council’s planning timeframes.

**Table 2: Network statistics – future base, 2-hour results**

Statistic	Base AM	2026 AM	2036 AM	Base PM	2026 PM	2036 PM
VKT (km)	<b>48,499</b>	53,290	59,209	<b>55,631</b>	60,879	68,180
VHT (h)	<b>830</b>	911	1,039	<b>960</b>	1,084	1,245
Average speed (km/h)	<b>56</b>	56	55	<b>56</b>	55	54
Average delay (sec/km)	<b>4.4</b>	5.4	5.8	<b>4.4</b>	7.0	8.0

The travel time results presented in Table 3 and Table 4 compared two travel time routes between the CBD and northern Wagga Wagga area. Under the existing arrangements in 2036, both outbound and inbound travel times via Gardiner Street are quicker compared to the route via Olympic Highway. In the preferred scenario (Scenario 8), travel times along both routes do increase but Gardiner Street route still offers slightly quicker travel times despite additional traffic choosing to use this route.

**Table 3: Olympic Highway vs. Gardiner Street Comparison: AM 2036 8:00am-9:00am**

Route	Future Base	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7	Scenario 8	Scenario 9
<b>Olympic Highway</b>									
Outbound	4:49	4:52	4:52	4:52	3:43	3:43	4:59	4:55	4:53
Inbound	5:09	5:14	5:14	5:13	5:03	5:05	5:17	5:38	5:26
<b>Gardiner Street</b>									
Outbound	3:52	3:51	3:53	4:34	4:36	4:33	4:33	4:30	4:36
Inbound	4:06	5:15	5:11	5:12	4:49	5:06	5:17	4:51	5:07

**Table 4: Olympic Highway vs. Gardiner Street Comparison: PM 2036 4:15pm-5:15pm**

Route	Future Base	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7	Scenario 8	Scenario 9
<b>Olympic Highway</b>									
Outbound	4:55	4:56	4:56	4:57	4:57	4:54	5:01	4:59	4:57
Inbound	5:11	5:24	5:24	5:30	5:20	5:19	5:24	5:40	5:30
<b>Gardiner Street</b>									
Outbound	3:52	4:50	4:50	5:13	4:38	4:44	4:45	4:30	4:35
Inbound	4:05	4:39	4:35	3:26	4:35	4:59	5:00	5:01	5:01

The results presented above showed that the congestion will continue to increase, even without the proposal. It is also acknowledged that modelling shows the introduction of signals on Olympic Highway would likely result in a slight deterioration of network performance (shown by a 15 per cent increase in travel time in 2036). However, this is only one aspect of the proposal assessment and Transport considers other benefits, such as potential reduction in number of crashes associated with unsignalised intersection and more options to manage and control the network, when assessing and refining options.

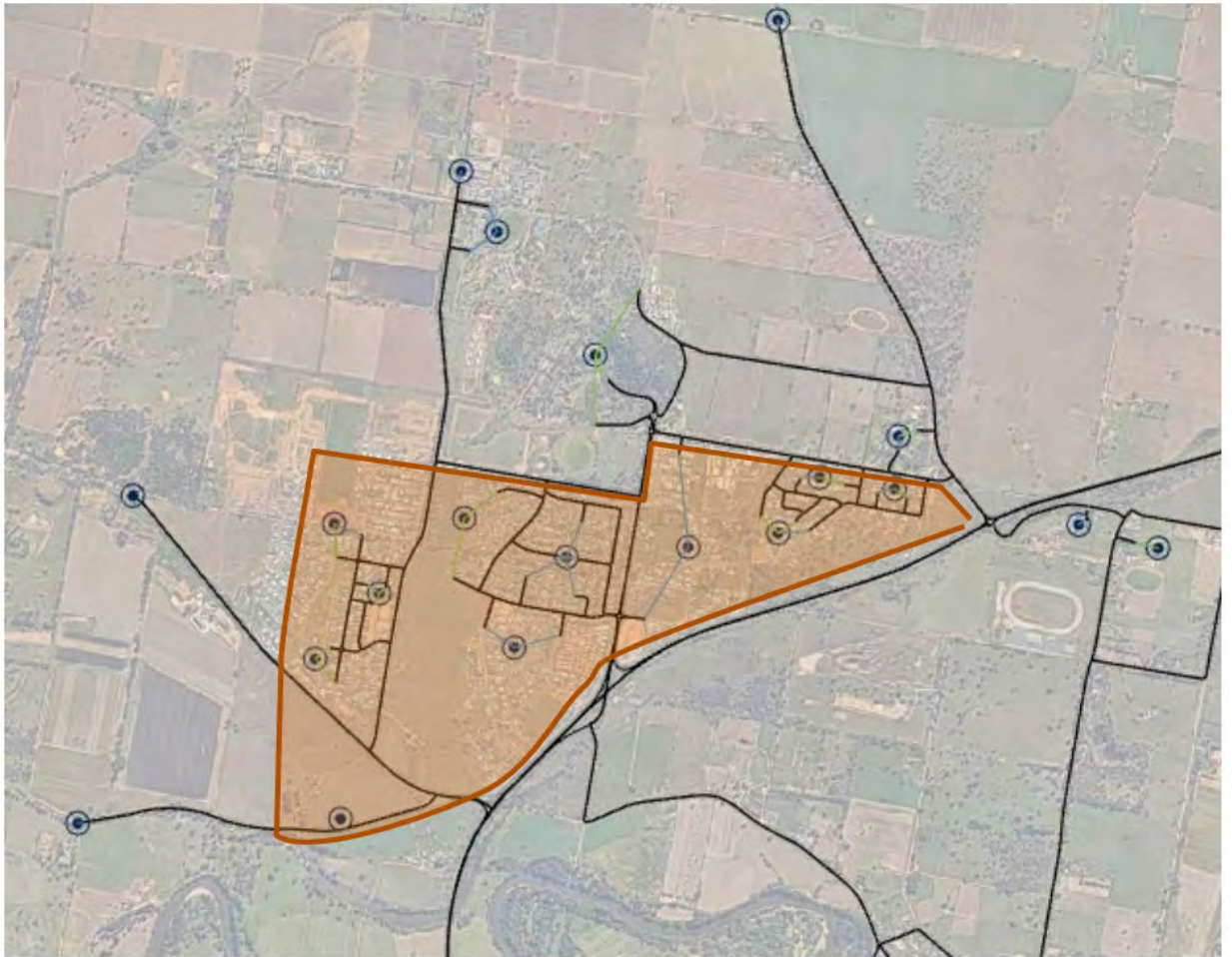
Assumptions related to future growth have been discussed and agreed with Transport. Table 5 presents growth rates for specific areas.

**Table 5: Applied growth rates for each centroid in Aimsun model**

TZP19 (Origin)	Location	Model Centroid	Applied growth rate to 2020 traffic	
			2026	2036
<b>Internal Zones (Study Area)</b>			<b>2026</b>	<b>2036</b>
7340	Ashmont	1, 11, 9002, 9003	1%	1%
7328	Estella	2001, 2002, 2003, 3001, 3002, 4001, 4002, 4003, 4004, 4005	6%	11%
7329*	North Wagga Wagga	7, 8, 5001, 5002	33%	86%
7332	Turvey Park	10, 9001	5%	10%
7339	Wagga Wagga	7001, 7002, 8001, 8002	1%	1%
7347	Currawarna	2, 3, 4, 5, 6, 1001, 1002, 1003	3%	5%
<b>Model Extremities</b>			<b>2026</b>	<b>2036</b>
7336	Bourkelands	1, 11	3%	7%
7348	Forest Hill	9, 19	3%	7%
7333	Glenfield Park	1, 11	3%	7%
7323	Gumly	8, 9, 10	3%	7%
7341	Kapooka	1	3%	7%
7322	Koorinal	10, 11	3%	7%
7324	Lake Albert	10, 11	3%	7%
7334	Mount Austin	10, 11	3%	7%
7325	Tatton	10, 11	3%	7%
7335	Tolland	10, 11	3%	7%
7352	Wagga Wagga Region	1, 6, 7, 8	3%	7%

\* employment growth rates applied to zone (destination total) and distributed in accordance with SAP assumptions

Figure 6 below provides a visual depiction of the trips modelled, with the northern growth area shaded. To provide further context and illustrate the level of growth in traffic volumes, particularly in the northern growth area, a review of the model travel zones in Figure 6 below, have been presented in Table 6.



**Figure 6: Northern Growth Area**

**Table 6: 2 hour 'Northern Growth Area' Trip Totals**

Scenario	Origin Trips (veh)*	Destination Trips (veh)*	Total Trips (veh)*
AM 2020	1,733	1,148	2,281
AM 2026	1,834	1,213	3,047
AM 2036	1,944	1,286	3,230
AM 2036 (with River Road Development)	2,578	1,886	4,464
PM 2020	1,107	1,983	3,090
PM 2026	1,175	2,105	3,280
PM 2036	1,282	2,267	3,549
PM 2036 (with River Road Development)	1,917	2,167	4,784

\* Volumes include internal trips between zones within the Northern Growth Area

Under the proposed arrangements in the preferred Scenario 8, the Olympic Highway northbound approach to the Travers Street intersection would be configured with two lanes: one through lane and one dedicated right-turn lane. As such, there would be no need for northbound traffic to merge into a single lane. Refer to Figure 7 below.



**Figure 7: Travers Street configuration**

The introduction of traffic signals at the Travers Street intersection considered how best to maintain access to Moorong Street. The left-in/left out arrangements maintain safe access whilst allowing for the new signalised intersection to operate with minimal number of signal phases to maintain efficiency and safety. Limiting Moorong Street to left-in left-out will prevent large heavy vehicles interrupting the mainline traffic flow and likely improve the longevity of the network as traffic volumes along Olympic Highway continue to increase over time. Traffic from Moorong Street wishing to travel south along Olympic Highway will be required to use the Kincaid Street roundabout.

## Flood events

### *Submission numbers*

73

### *Issue description*

One submission raised the following concern:

- it is unknown whether traffic impacts as a result of flood events have been considered. For example, flooding from Murrumbidgee River forces the closure of Mundowry Lane and Eunony Bridge Road.

### *Response*

The Murrumbidgee River has experienced significant flooding in recent years. The recent flood events in 2022, 2016 and 2012 indicate the Murrumbidgee River floods reasonably often and extensively.

Transport will manage and avoid additional traffic impacts during construction activities in the event of a significant flood.

## Socio-economic and liveability: access and connectivity

### **Moorong Street access**

#### *Submission numbers*

10, 11, 14, 27, 62, 63

#### *Issue description*

Six submissions raised the following concerns:

- heavy vehicles will have difficulty delivering goods and services to businesses along Moorong Street with the left-only exit at the northern end
- traffic will have to travel south along Moorong Street to the Kincaid Street intersection in order to access Travers Street
- heavy vehicles servicing businesses along Moorong Street will not have enough space to turn around to exit through the Kincaid Street intersection
- clients of the veterinary clinic on Moorong Street will not be able to access Moorong Street from the Travers Street intersection when travelling southbound along Olympic Highway. Some clients need treatment immediately (for example, when hit by a car or bitten by a snake), therefore the vet services can be very time critical.

#### *Response*

The preferred option includes access changes to the northern intersection of Moorong Street and the Olympic Highway to left-in, left-out. This change will remove conflicts of traffic turning across the highway at this location, which will improve safety. Full access to Moorong Street will be maintained via Kincaid Street, as the preferred option only prevents some movements, and does not block off Moorong Street completely (sourced from FAQ Dec 2020).

The distance from Travers Street to Kincaid Street is around one kilometre, which would take around one minute to travel, which would result in around two extra minutes of travel from Gobbagombalin Bridge to the northern end of Moorong Street. From Moorong Street to Gobbagombalin Bridge there will be no extra travel time as a result of the intersection upgrades.



Following feedback from the community, Transport changed the northern Moorong Street design. The change includes a u-turn bay, removing conflicts of traffic turning across the highway at this location, which will improve safety. Access via Kincaid Street will remain, which would result in about two extra minutes of travel from Gobbagombalin Bridge to the northern end of Moorong Street.

Transport will consult with affected businesses along Moorong Street, including the veterinary clinic, regarding options to manage accessibility impacts.

### **Emergency vehicle access**

#### *Submission numbers*

7, 12, 23, 39

#### *Issue description*

Four submissions raised the following concern:

- concern emergency vehicles will not be able to tend to an incident due to idling traffic at the traffic lights
- concern emergency vehicles will not be able to tend to an incident due to traffic congestion along Gobbagombalin Bridge.

#### *Response*

Extensive traffic modelling was carried out by Transport for the proposal, which found the queues along Olympic Highway and Gobbagombalin Bridge would be cleared after each traffic light cycle in peak times.

Transport consulted with emergency services (briefing held on 18 October 2021) during the REF display period regarding potential access restrictions on the Gobbagombalin Bridge when attending an accident and advised traffic light phasing will prioritise the Olympic Highway traffic. Formal submissions were invited following this briefing; however none were received.

Transport will continue to consult with emergency services during construction of the proposal to ensure access is provided along Gobbagombalin Bridge at all times.

### **Access for horses**

#### *Submission numbers*

63

#### *Issue description*

One submission raised the following concerns:

- it is unknown if the horse access across Olympic Highway at Travers Street is an underpass at the current horse entrance
- an at-grade horse crossing is a poor solution
- detail is needed regarding the need for a horse crossing at a single location.

#### *Response*

The existing horse pathway will be redirected to accommodate the proposal, with installation of fencing to control the risk of horses bolting. The horse pathway is an underpass, which avoids the safety risks associated with at-grade crossings.

Transport has consulted with relevant stakeholders regarding horse access at Travers Street and will continue to work with Wagga Wagga City Council and these stakeholders to ensure safe horse access to the MTC.



## **Pedestrian and cyclist access**

### *Submission numbers*

25, 63, 77

### *Issue description*

Three submissions raised the following concerns:

- the proposal does not address the need for pedestrian access to the City of Wagga
- pedestrians accessing the Wiradjuri Walking Track from Travers Street would have to cross the proposed car park
- it is unknown how cyclists would access the Wiradjuri Walking Track when riding westbound along Travers Street.

### *Response*

Improvements to pedestrian access for the City of Wagga is out of scope for the proposal.

Wagga Wagga City Council has released the Wagga Wagga Active Travel Plan, which includes a 56km network of dedicated cycle paths / shared paths. When complete, this will crisscross the city and provide residents with a safe, alternative transport option for commuting. The proposal has considered the council plans for improved cyclist and pedestrian access during the options assessment. The preferred option is compatible with these council plans.

The proposal includes driveway access and parking on the old Travers Street road pavement for the Wiradjuri Walking Track. Transport has added an informal pedestrian crossing from the proposed Wiradjuri Walking Track carpark to the MTC across Travers Street. Transport will continue consulting with council about changes to Wiradjuri Walking Track access and carparking.

## **Access to bus routes**

### *Submission numbers*

8

### *Issue description*

One submission raised the following concern:

- buses will not be able to turn around at the northern end of Moorong Street to travel southbound and cannot be put in reverse unless in an emergency. Therefore, buses must exit Moorong Street and travel northbound along Gobbagombalin Bridge. It is unknown if alternative route options are available when local bus services cannot access Gobbagombalin Bridge due to bridge closure (as a result of a road accident etc).

### *Response*

Following feedback from the community, Transport changed the northern Moorong Street design. The change includes a u-turn bay, removing conflicts of traffic turning across the highway at this location, which will improve safety. Access via Kincaid Street will remain, which would result in about two extra minutes of travel from Gobbagombalin Bridge to the northern end of Moorong Street.

## Socio-economic and liveability: community safety

### Traffic accidents

#### *Submission numbers*

21, 76

#### *Issue description*

Two submissions raised the following concern:

- the proposal will not reduce the number of traffic accidents along Olympic Highway.

#### *Response*

The existing Old Narrandera Road and Travers Street intersections are known to create safety risks for motorists, with Transport recording 12 crashes across both intersections between July 2013 and June 2018. Motorists are known to behave cautiously due to perceived safety risks at both intersections. This caution can cause frustration leading to poor driver behaviour from other drivers, such as taking increased risks and poor gap selection.

The proposal aims to address these safety concerns by increasing the traffic capacity and network efficiency of both intersections. By including traffic lights at the intersections, drivers would not need to wait for safe gaps in traffic, minimising the need for drivers to make decisions on when to cross oncoming traffic on the Olympic Highway and the risk of poor driver behaviour.

### Traffic signals

#### *Submission numbers*

10

#### *Issue description*

One submission raised the following concern:

- request for traffic signals alerting oncoming traffic (especially heavy vehicles) of red lights at Travers Street and Old Narrandera Road, which would avoid rear end collisions.

#### *Response*

Traffic signal warning signs will be installed in advance of traffic signals to warn road users of the approaching traffic lights.

### Traffic cameras

#### *Submission numbers*

56, 57

#### *Issue description*

Two submissions raised the following concern:

- request for mobile phone detection cameras to discourage people from using their phones while driving
- request for red light cameras at the Travers Street intersection to reduce the risk of accidents in the merging lane for vehicles exiting Moorong Street onto Olympic Highway.

#### *Response*

Mobile phone detection cameras, fixed speed cameras and red-light cameras are not proposed to be installed as part of this proposal. Sites are selected based on crash statistics at intersections. Information about the program is available to all road users on the Centre for Road Safety website, which can be accessed through the following link:

[roadsafety.transport.nsw.gov.au/index.html](https://roadsafety.transport.nsw.gov.au/index.html).

### **School drop off areas**

#### *Submission numbers*

8

#### *Issue description*

One submission raised the following concern:

- concern regarding the safety of children exiting buses along the eastern side of Moorong Street without a footpath or median strip
- bus routes would be changed due to the proposed left in, left out arrangement into the northern end of Moorong Street; therefore, safe school bus stops should be provided.

#### *Response*

Transport has consulted with local bus service providers. Transport is building a u-turn bay at the northern end of Moorong Street that will allow school buses to turn around and use the existing school bus routes and facilities along Moorong Street, without the need for additional school bus stops.

### **Heavy vehicles using Kincaid Street**

#### *Submission numbers*

62

#### *Issue description*

One submission raised the following concern:

- the left-turn only exit out of northern Moorong Street will re-direct heavy vehicles southbound and along Kincaid Street, which is in a primarily residential precinct. The increased traffic along Kincaid Street poses safety risks for residents.

#### *Response*

The traffic modelling carried out by Transport concluded the installation of traffic signals at the Travers Street intersection is unlikely to result in extensive rat-running behaviour along Kincaid Street.

### **Horses crossing Travers Street**

#### *Submission numbers*

18

#### *Issue description*

One submission raised the following concerns:

- there are safety risks for horses crossing the Travers Street intersection at-grade. Grade separation works would be more suitable
- a new horse underpass should be considered to improve safety.

*Response*

Horses will be directed to use the new horse pathway at the Travers Street intersection. The existing underpass access across Olympic Highway will not be impacted as a result of the proposal.

Transport investigated a new horse underpass at Travers Street and found it not viable for the following reasons:

- poor vehicle sight distance over a rise in the road
- poor compliance with road grades approaching an intersection with traffic lights making heavy vehicle driving difficult
- additional placement and excavation of road material would encroach into MTC property and impact current access to main entrance
- additional placement and/or excavation of road material would impact the existing shared user path adjacent to MTC
- additional (to the existing design) large trees would require removal
- many additional (to the existing design) existing utility services would be impacted
- the predicted future use of a new horse underpass is limited
- the proposed alternative horse path uses the existing signalised crossing on Travers Street.

**Road speed limits**

*Submission numbers*

56

*Issue description*

One submission raised the following concern:

- request to decrease the speed along Olympic Highway and Gobbagombalin Bridge to 60km/hr to reduce the risk of vehicle collision at intersections.

*Response*

Earlier traffic modelling was carried out by Transport to estimate any differences to efficiency and safety outcomes with a reduced speed limit. The modelling did not find any noticeable difference between a 60km/hr speed limit and 80km/hr speed limit. No further modelling has been carried out.

**Street lighting**

*Submission numbers*

78

*Issue description*

One submission raised the following concern:

- there is insufficient street lighting along Old Narrandera Road and Pine Gully Road, which poses a risk for drivers.

*Response*

New street lighting is included in the Olympic Highway intersection upgrades. Improvements to street lighting away from the Olympic Highway intersections is outside the scope of the proposal. Wagga Wagga City Council are proposing to make improvements to the Pine Gully Road from the Old Narrandera Road intersection as part of the Pine Gully Road Upgrade Project. Transport will continue consulting with council and raise these concerns for their consideration in project design.

## Socio-economic and livability: business and industry

### Impact to local businesses

#### *Submission numbers*

11, 14, 27, 72, 79

#### *Issue description*

Five submissions raised the following concerns:

- the proposed left-in, left-out arrangement at the northern end of Moorong Street will impact businesses along Moorong Street, as this reduces access from the Northern Growth Areas of Wagga Wagga
- clients of businesses along Moorong Street will be detoured to direct competitors
- heavy vehicles servicing businesses along Moorong Street will struggle to deliver goods, which impacts the supply for businesses.

#### *Response*

Access to Moorong Street from the Northern Growth Areas of Wagga Wagga will be maintained through Kincaid Street. The distance from Travers Street to Kincaid Street is around one kilometre which would take around one minute to travel, which would result in around two extra minutes of travel from Gobbagombalin Bridge to the northern end of Moorong Street.

Transport will liaise with Moorong Street businesses about suitable signage to inform the community of changed business access, traffic requirements and wayfinding.

Following feedback from the community, Transport changed the northern Moorong Street design. The change includes a u-turn bay, removing conflicts of traffic turning across the highway at this location, which will improve safety. Access via Kincaid Street will remain, which would result in about two extra minutes of travel from Gobbagombalin Bridge to the northern end of Moorong Street. Transport will continue to consult with businesses along Moorong Street regarding management of impacts to heavy vehicles delivering goods.

## Consultation

### REF display

#### *Submission numbers*

5, 18, 37

#### *Issue description*

Three submissions raised the following concerns:

- the REF display period was inadequate to thoroughly review the proposal and prepare a submission
- there was difficulty accessing the REF and associated documents.

#### *Response*

The *Environmental assessment procedure* guidelines (Roads and Maritime (RMS), 2016a) has identified the process for publicly displaying a Transport for NSW REF. An REF must be displayed for a minimum of 21 days for projects that are not likely to be a significant impact on nationally listed threatened species, ecological communities or migratory species, which includes the proposal.

The proposal was publicly displayed for 33 days on the Transport project website and made available for download. All published documents associated with the proposal, including the concept design, are also available on the website. In addition, four social media posts were featured via NSW Road's Facebook page during the REF display period.

Transport also established a digital engagement room so the community could view project documents such as poster boards, videos containing proposal information, a copy of the REF and frequently asked questions, and provide direct feedback via this portal.

### **Addressing community concerns**

#### *Submission numbers*

3, 70

#### *Issue description*

Two submissions raised the following concern:

- Transport does not consider the community's opinions on upcoming projects.

#### *Response*

Community feedback was first sought on the project in June 2019 through a range of methods when the proposal was announced including the Transport website, an online consultation map, media coverage, social media, in-person consultation, and direct correspondence.

The proposal design options were reinvestigated in December 2020 in response to the community feedback provided.

A community engagement program was delivered in March 2021 that spoke with 19 stakeholders including local residents, local government, emergency service providers, local businesses and industry organisations that informed a number of recommendations and strategies to manage the impacts of the proposal and enhance potential benefits to the community.

Transport will continue to consult key interested and affected stakeholders over the course of the proposal and consider community feedback throughout the design and construction of the proposal.

### **Consultation with Council**

#### *Submission numbers*

18

#### *Issue description*

Wagga Wagga City Council raised the following concerns:

- request for a formal presentation with council to discuss the recommendations and findings of the REF
- as the proposal will impact flood liable land, consultation is required with NSW State Emergency Service (SES) and council under clause 15 of the State Environmental Planning Policy (Infrastructure) 2007 (ISEPP) (now clause 3.10 of the State Environmental Planning Policy (Transport and Infrastructure) 2021)
- as the proposal will strain the local road network, consultation with council is required under clause 13 of the ISEPP (now clause 3.8 of the State Environmental Planning Policy (Transport and Infrastructure) 2021).

*Response*

Transport consulted with SES and Wagga Wagga City Council on 3 August 2021, as per the requirements under clause 3.10 of the State Environmental Planning Policy (Transport and Infrastructure) 2021. A response was received from SES on 23 August 2021 and from council on the 31 August 2021. Refer to Appendix E of the REF for the notification letters and responses received.

On 20 June 2022, Transport provided a formal presentation of the project to council and discussed recommendations and findings of the REF in accordance with their submission request. Council asked questions and provided comments regarding traffic modelling and the proposed design (including changes to the design). Council:

- suggests the proposal will redirect traffic away from the State Road network and onto the local road network, thereby straining the traffic capacity of the local road system
- requests further consideration of additional impacts on the local road network and detailed review by Wagga council
- requests clarification on traffic modelling and predictions, including:
  - Gardiner Street traffic modelling
  - evidence and clarification on the predicted network efficiency with the introduction of the proposal
  - clarification on the Northern Growth Area traffic growth rates.
- opposes traffic lights, with preference for grade separated interchanges
- requests duplication of Gobbagombalin Bridge
- has concerns regarding the Travers Street lane configuration for merging traffic
- has concerns regarding traffic congestion at the Pearson Street roundabout
- some opposition to the proposed left-in, left-out arrangement at Moorong Street, even with the inclusion of a u-turn bay for heavy vehicles.

Preference for a new horse underpass was discussed, but council agreed that this may not be required, given horse numbers currently using the underpass.

Responses to issues raised by council, in the written submission and in verbal discussions during the formal presentation, are provided throughout this report under the council submission number (18).

Council will be notified of any excavation works to Council-owned roads and footpaths, as required under *clause 3.8 of the State Environmental Planning Policy (Transport and Infrastructure) 2021*.

Transport will continue to consult with SES and Wagga Wagga City Council throughout the project.

## Aboriginal cultural heritage

### Cultural significance of the proposal area

#### *Submission numbers*

17

#### *Issue description*

One submission raised the following concerns:

- areas within the proposal area are of high importance to the Wiradjuri people and country. These are dreaming and songline places
- a new site within the proposal area will be registered to the Aboriginal Heritage Information Management System (AHIMS).

#### *Response*

An Aboriginal cultural heritage assessment was carried out to address this concern and assess the cultural significance of the proposal area. The findings of this assessment are summarised in the 'Aboriginal cultural heritage assessment' section of this report.

It was acknowledged that the landscape surrounding the proposal is one that is rich in cultural value with a range of locations identified within it as holding cultural significance including important resource areas, Story or Dreaming Paths, ceremonial grounds, ring trees, burial trees, movement corridors (pathways), men's business places, women's business places, and traditional and historical living places. Additional safeguards and mitigation measures have been included for the proposal to minimise impact to Aboriginal cultural values and highlight the significance of the landscape, including (but not limited to) delineating protective fencing around Aboriginal cultural values, incorporating awareness training into site inductions, establishing interpretive signage and artworks at cultural sites and the development of a booklet containing cultural values and historical records relating to the cultural sites for areas within proximity to the proposal.

### Consultation

#### *Submission numbers*

17

#### *Issue description*

One submission raised the following concerns:

- it is unknown whether Transport engaged any Registered Aboriginal Parties (RAPs) when carrying out preliminary Aboriginal cultural heritage assessments for the proposal
- it is requested RAPs are involved in the design of the proposal.

#### *Response*

Transport has carried out consultation with Aboriginal stakeholders in accordance with the *Procedure for Aboriginal Cultural Heritage Consultation and Investigation (PACHCI)* (RMS, 2011).

Under the PACHCI guidelines, it is a requirement to consult with the Local Aboriginal Land Council (LALC) for the proposal area. The Wagga Wagga LALC was engaged to participate in the field survey and to provide any cultural knowledge associated with the wider project area. The Transport's Aboriginal Cultural Heritage Officer also attended the site inspection on 1 October 2020.



Additionally, an Aboriginal cultural heritage assessment was carried out from March 2022 to November 2022 in consultation with RAPs and First Nations cultural information holders, with On Country meetings during May, June and July 2022. The findings of this assessment are summarised in the 'Aboriginal cultural heritage assessment' section of this report.

Through consultation with RAPs and First Nations cultural knowledge holders, it was highlighted that the landscape surrounding the proposal is one that is rich in cultural value with a range of locations identified within it as holding cultural significance including important resource areas, Story or Dreaming Paths, ceremonial grounds, ring trees, burial trees, movement corridors (pathways), men's business places, women's business places, and traditional and historical living places.

Additional safeguards and mitigation measures have been included for the proposal to minimise impact to Aboriginal cultural values and highlight the significance of the landscape, including (but not limited to) delineating protective fencing around Aboriginal cultural values, incorporating awareness training into site inductions, establishing interpretive signage and artworks at cultural sites and the development of a booklet containing cultural values and historical records relating to the cultural sites for areas within proximity to the proposal.

### **Site surveys**

#### *Submission numbers*

17

#### *Issue description*

One submission raised the following concerns:

- it is unknown whether any RAPs were involved in the survey work as part of an Aboriginal cultural heritage assessment for the REF
- request for RAPs to be involved in survey work for ecological and other environmental assessments
- it is unknown whether any Potential Archaeological Deposits (PADs) were identified by the RAPs
- if PADs are identified, archaeological test pit excavations should be carried out to confirm existence.

#### *Response*

Under the PACHCI guidelines, it is a requirement to consult with the Local Aboriginal Land Council (LALC) for the proposal area. The Wagga Wagga LALC was engaged to participate in the field survey and to provide any cultural knowledge associated with the wider project area. The Transport Aboriginal Cultural Heritage Officer also attended the site inspection on 1 October 2020.

Following this, an Aboriginal cultural values assessment was carried out from March 2022 to November 2022 in consultation with RAPs and First Nations cultural information holders, with On Country meetings during May, June and July 2022. The findings of this assessment are summarised in the 'Aboriginal cultural heritage assessment' section of this report. Information regarding the methodology undertaken for the Stage 2 PACHCI was provided to the RAPs and First Nations cultural knowledge holders during consultation. A copy of the Stage 2 PACHCI was provided upon request.

Through consultation with RAPs and First Nations cultural knowledge holders, it was highlighted that the landscape surrounding the proposal is one that is rich in cultural value with a range of locations identified within it as holding cultural significance including important resource areas, Story or Dreaming Paths, ceremonial grounds, ring trees, burial trees, movement corridors (pathways), men's business places, women's business places, and traditional and historical living places.

There are no plans to undertake PACHCI Stage 3 site surveys for the proposal, as the Aboriginal cultural values assessment identified cultural values being present and noted site surveys or archaeological investigations are not required.

Additional safeguards and mitigation measures have been included for the proposal to minimise impact to Aboriginal cultural values and highlight the significance of the landscape, including (but not limited to) delineating protective fencing around Aboriginal cultural values, incorporating awareness training into site inductions, establishing interpretive signage and artworks at cultural sites and the development of a booklet containing cultural values and historical records relating to the cultural sites for areas within proximity to the proposal. Further, Transport has an unexpected finds procedure that will be implemented during construction.

### **Site inductions and toolbox talks**

#### *Submission numbers*

17

#### *Issue description*

One submission raised the following concern:

- Cultural immersion and Due Diligence programs should be delivered to all construction contractors and staff on site, including the Project Arborist.

#### *Response*

An Aboriginal Heritage Management Plan (AHMP) will be prepared as part of the CEMP for the proposal. The AHMP will outline the heritage management approach for Transport employees and its subcontractors during construction of the proposal.

This AHMP will include any information on known Aboriginal cultural heritage items in the proposal area, descriptions of their significance and safeguard measures for protecting these items.

An Aboriginal cultural heritage assessment was carried out to assess the cultural significance of the proposal area. It was acknowledged that the landscape surrounding the proposal is one that is rich in cultural value with a range of locations identified within it as holding cultural significance. Additional safeguards and mitigation measures have been included for the proposal to minimise impact to Aboriginal cultural values and highlight the significance of the landscape, including (but not limited to) incorporating awareness training into site inductions.

### **Incorporating Aboriginal culture into the proposal**

#### *Submission numbers*

17

#### *Issue description*

One submission raised the following concerns:

- request for a 'bush tucker garden' under Gobbagombalin Bridge
- request for local schools to 'Adopt a Garden' to grow and learn about Australian plants and biodiversity, as well as the Wiradjuri culture and country
- request for trees to be removed to inspected by RAPs. The tree remains should be shared with the community and local schools to learn about making Aboriginal cultural tools and items.

### *Response*

An Aboriginal cultural heritage assessment was carried out to assess the cultural significance of the proposal area. The findings of this assessment are summarised in the 'Aboriginal cultural heritage assessment' section of this report. It was acknowledged that the landscape surrounding the proposal is one that is rich in cultural value with a range of locations identified within it as holding cultural significance including important resource areas, Story or Dreaming Paths, ceremonial grounds, ring trees, burial trees, movement corridors (pathways), men's business places, women's business places, and traditional and historical living places.

Additional safeguards and mitigation measures have been included for the proposal to minimise impact to Aboriginal cultural values and highlight the significance of the landscape, including (but not limited to) rehabilitation and revegetation works at impacted areas along the proposal area in consultation with RAPs and First Nations cultural knowledge holders, engagement with local First Nations community organisations regarding reuse of timber for cultural purposes, establishing interpretive signage and artworks at cultural sites and the development of a booklet containing cultural values and historical records relating to the cultural sites for areas within proximity to the proposal.

School programs are outside the scope of this proposal. The suggestions for a 'bush tucker garden' and 'Adopt a Garden' program will be shared with Wagga Wagga City Council for their consideration.

## Biodiversity

### **Rehabilitation works**

#### *Submission numbers*

17

#### *Issue description*

One submission raised the following concern:

- request for all invasive plant species to be removed around the Murrumbidgee River and rehabilitation works done.

#### *Response*

Rehabilitation and revegetation of impacted areas along the proposal area, within or adjacent to cultural site(s), will occur with local native plant species at completion of construction works. The identification of appropriate plant species will be undertaken in consultation with the RAPs and First Nations cultural knowledge holders. Preference will be given to local First Nations organisations (that meet contract requirements) for engagement for revegetation and landscaping works.

Additionally, weed control measures will be in place during construction of the proposal to minimise risk of weed dispersal into the Murrumbidgee River riparian areas.

## Noise and vibration

### Heavy vehicles in residential areas

#### *Submission numbers*

62

#### *Issue description*

One submission raised the following concern:

- the proposed left-in, left-out arrangement at the northern end of Moorong Street does not allow traffic along Moorong Street to access to Travers Street from the northern end. This will force heavy vehicles to use Kincaid Street in place of Travers Street. This will increase the noise pollution along Kincaid Street, which is situated in a primarily residential area.

#### *Response*

Traffic modelling carried out by Transport concluded the installation of traffic signals at the Travers Street intersection is unlikely to result in extensive rat-running behaviour along Kincaid Street. Additionally, the proposal is not expected to increase road traffic noise by more than 2dB(A) at any sensitive receiver.

Following feedback from the community, Transport changed the northern Moorong Street design. The change includes a u-turn bay, removing conflicts of traffic turning across the highway at this location, which will improve safety. Access via Kincaid Street will remain, which would result in about two extra minutes of travel from Gobbagombalin Bridge to the northern end of Moorong Street.

### Noise controls

#### *Submission numbers*

71

#### *Issue description*

One submission raised the following concern:

- request for a noise barrier along the eastern side of Olympic Highway, from Travers Street to beyond Spring Street.

#### *Response*

The noise and vibration impact assessment found that the proposal is not expected to increase road traffic noise by more than 2dB(A) at any sensitive receiver, so noise walls are not required.

## Construction activities

### Planned construction schedule

#### *Submission numbers*

48

#### *Issue description*

One submission raised the following concern:

- the timeline for delivering the proposal is too long. With the growth of the Wagga Wagga area, the traffic along Olympic Highway is getting worse.

#### *Response*

The schedule for construction of the proposal is dependent on the timeline for undertaking environmental assessments to identify potential impacts (including the REF), obtaining relevant approvals and consulting with relevant stakeholders. Additionally, property acquisition and leases would be carried out.

Businesses and private residents would be notified of the construction activities, including the nature of the work, potential impacts (e.g., noise) and expected timing.

Construction of the proposal is expected to be up to 12 months, with works on both intersections occurring simultaneously.

## Future plans for Wagga Wagga

### Wagga Wagga City Council plans

#### *Submission numbers*

16

#### *Issue description*

One submission raised the following concern:

- the proposal does not align with Wagga Wagga City Council's plans for the Northern Growth Area.

#### *Response*

The proposal aims to address existing traffic congestion issues at the Old Narrandera Road and Travers Street intersections of the Olympic Highway and minimise future issues that arise due to growth in the Wagga Wagga area, whilst also addressing road safety concerns.

To achieve this, one of the identified objectives of the proposal is to deliver a project enabling flexibility for future additional capacity to support traffic growth from continued industrial and residential development in Wagga's Northern Growth Area and Special Activation Precinct.

The proposal is expected to improve access between the Northern Growth Areas and services located in the city centre.

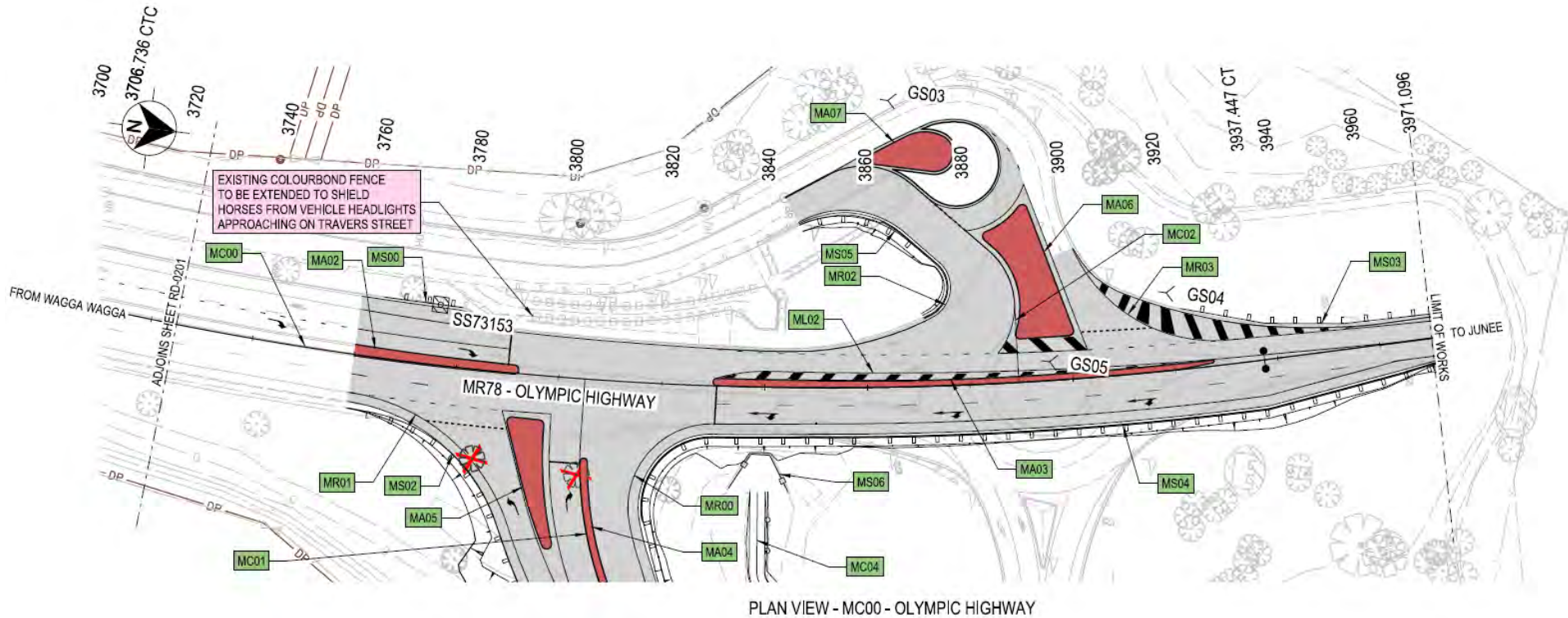
## Changes to the proposal

### Travers Street design

Since the REF display period, the Travers Street intersection design has been updated. These changes include:

- Moorong Street u-turn bay, refer to Figure 8
- informal pedestrian crossing, refer to Figure 9.

No material changes have been made to the design of the Old Narrandera Road intersection.



PLAN VIEW - MC00 - OLYMPIC HIGHWAY

Figure 8: Moorong Street u-turn bay for heavy vehicles







# Environmental assessments

## Aboriginal cultural heritage assessment

Following feedback during the submissions period (refer to the 'Aboriginal cultural heritage' section above), an Aboriginal Cultural Values Assessment Report (ACVAR) was carried out by Waters Consultancy Pty Ltd (Waters Consultancy) collaboratively with the identified First Nations cultural knowledge holders to assess potential impacts the proposal has on intangible Aboriginal cultural values. A summary of the ACVAR is provided below, with the redacted ACVAR provided at Appendix 2. A redacted version of this report is provided at the request of the RAPs and First Nations cultural knowledge holders to protect cultural sensitivities.

### Summary of additional study and consultation

The Aboriginal cultural values assessment was carried out in collaboration with cultural knowledge holders, as identified by the RAPs, to record historical and cultural values. Documentary research and historical analysis was also undertaken to support and contextualise the Aboriginal cultural values assessment.

Transport emailed RAPs an invitation to attend an Aboriginal Focus Group meeting (AFG) on 4 April 2022. Prior to the AFG meeting, Waters Consultancy sent all RAPs the proposed cultural values assessment methodology for review. The AFG meeting was held via Zoom at which the draft methodology was discussed, and a verbal invitation was given for the nomination of cultural knowledge holders. On 29 April 2022, the finalised methodology was sent to all RAPs.

On Country meetings and cultural mapping was carried out with nominated cultural knowledge holders during May, June, and July 2022, with follow up discussions regarding cultural values and cultural mapping occurring via Zoom and telephone during July and August 2022. In addition to the detailed cultural mapping undertaken for the proposal, the cultural knowledge holders shared cultural and historical information on the broader cultural landscape of the Country, which has informed the discussion of cultural heritage values and significance in this part of Wiradjuri Country in the ACVAR.

The draft ACVAR was provided to the RAPs and the cultural knowledge holders by Transport on 21 October 2022 along with an invitation to an AFG on 31 October 2022 to discuss the draft ACVAR. Waters Consultancy presented on the draft ACVAR at the AFG on 31 October 2022; subsequently minutes from the meeting were provided to the RAPs and cultural knowledge holders by Transport. Transport subsequently met with the Wagga Wagga LALC who were unable to attend the AFG.

As an outcome of the discussions at the AFG, and subsequent input from RAPs and cultural knowledge holders, a redacted version of the ACVAR with locational and culturally sensitive data removed was produced for public distribution. The redacted ACVAR was provided to RAPs and cultural knowledge holders for final review on 15 November 2022 by Transport. Written comments were received from three RAPs. Waters Consultancy subsequently verbally confirmed with the four cultural knowledge holders that they were comfortable with the ACVAR, and no changes were required.

### Description of existing environment

A study area was defined for the ACVAR, which encompassed the construction footprint for the proposal.

The study area is part of southern Wiradjuri Country, lying in the Riverina region of southern New South Wales. Wagga Wagga lies on the Murrumbidgee River within the Murray Darling drainage system. The Murrumbidgee River begins high up in Kosciuszko National Park, from its headwaters there it flows north along the eastern edge of the mountains, through the Australian Capital Territory, before turning westward just north of the Brindabellas to run out to Jugiong, then south to Gundagai before heading out through the western slopes and plains until it joins the Murray River at Boundary Bend some 40 kilometres downstream from Balranald.

Within the study area, 12 items of cultural value have been identified across nine cultural site locations, including:

- a women's business site
- two landscape features that form part of a Dreaming Story
- a water feature that forms part of a Dreaming Story
- two resource and gathering areas
- two old growth trees
- three cultural resource trees
- the Murrumbidgee River.

It is noted that the RAPs and the cultural knowledge holders also place cultural value on any material cultural objects identified during the proposal. The surrounding landscape is one that is rich in cultural value with a range of locations identified within it as holding cultural significance including important resource areas, Story or Dreaming Paths, ceremonial grounds, ring trees, burial trees, movement corridors (pathways), men's business places, women's business places, and traditional and historical living places.

#### **Potential impacts and revised safeguards and management measures**

The cultural knowledge holders and RAPs have identified their concerns regarding the impact of works on the ecosystems of the study area and beyond. Knowledge of Country includes knowledge of landforms, waterways, sky Country, soundscapes, plants and animals, and the ways in which these all come together to form specific local ecosystems. These elements all hold cultural value as part of Country and for their links to cultural activities and to the cultural stories that act to preserve and transmit cultural knowledge. This knowledge links the environment to spiritual, ethical and community values and is *"... an integral part of people's life and knowledge systems"*.

The ACVAR recommended a range of cultural heritage safeguards and site-specific safeguards to be implemented throughout the construction and operation of the proposal, as identified in Table 7 below. These are designed to protect Aboriginal cultural heritage values within the proposal footprint from unintended impacts and to provide appropriate mitigation measures to record and respect Aboriginal cultural heritage values where impact will occur.

**Table 7 Aboriginal Cultural Values Assessment: Revised General Safeguards and Management Measures**

Impact	Environmental safeguard	Responsibility	Timing	Reference
Aboriginal cultural heritage	An Aboriginal Heritage Management Plan (AHMP) should be prepared and implemented as part of the Construction Environmental Management Plan (CEMP). The AHMP should provide specific guidance on measures and controls to be undertaken to avoid and mitigate impacts on Aboriginal cultural heritage during construction. This should include protection measures to be applied during construction, including but not limited to the recommendations set out in this table, as well as contractor training in general Aboriginal cultural heritage awareness and management of Aboriginal heritage values.	Contractor / Transport	Pre-construction / construction	N/A
Aboriginal cultural heritage	An Aboriginal Cultural Heritage awareness training package should be delivered as part of the site induction for all contractor(s) and maintenance personnel involved in the construction works. The training package should be informed by the Cultural Values Assessment Report and be developed by Transport for NSW in consultation with the project RAPs and identified Cultural Knowledge Holders to ensure that it is specific to the Country that the project is located within. The training package should at a minimum ensure awareness of the cultural significance of the project area, the requirements of the AHMP and relevant statutory responsibilities, and the identification of unexpected heritage items and appropriate management procedures.	Contractor	Pre-construction / construction	N/A
Aboriginal cultural heritage	Rehabilitation and revegetation of impacted areas (outside road corridor) within or adjacent to cultural site(s) should occur with local native plant species at completion of construction works. The identification of appropriate plant species should be undertaken in consultation with the RAPs and identified Cultural Knowledge Holders. Preference should be given to local First Nations organisations (that meet contract requirements) for engagement for revegetation and landscaping works.	Contractor / Transport	Post-construction	N/A
Aboriginal cultural heritage	Transport to facilitate local First Nations community organisations having the opportunity to acquire timber from any trees removed during the works for cultural re-use.	Transport	Pre-construction / construction	N/A
Aboriginal cultural heritage	The AHMP should provide for an addition to the Unexpected Heritage Items Procedure 2015 to require the notification of the identified Cultural Knowledge Holders within 48 hours of any discovery of potential archaeological Aboriginal ancestral remains during the proposed works.	Contractor / Transport	As required	N/A
Aboriginal cultural heritage	If there is a confirmed discovery of archaeological Aboriginal ancestral remains it is recommended that consultation occur with the RAPs and identified Cultural Knowledge Holders to inform: the development of a Management Plan for proposed works in the relevant area; cultural ceremonies in relation to the ancestral remains and the site of their occurrence; and repatriation of the ancestral remains.	Contractor / Transport	As required	N/A
Aboriginal cultural heritage	In relation to all identified cultural sites: <ol style="list-style-type: none"> <li>the site(s) be marked on all operational maps as area(s) of environmental and heritage sensitivities.</li> <li>the detailed design should aim to minimise the impact of the construction footprint on the cultural site(s).</li> <li>effective protective fencing should be erected between the zone of construction activity and the unimpacted area of the site prior to any construction activities.</li> <li>the location and erection of the temporary fencing to be approved by the Transport for NSW Project Senior Environmental and Sustainability Officer and the Transport for NSW Aboriginal Cultural Heritage Officer. This will be documented and sent to the project RAPs and Cultural Knowledge Holders (through the provision of mapping and photographs by Transport for NSW).</li> </ol>	Contractor / Transport	Pre-construction	N/A
Aboriginal cultural heritage	A native vegetation zone to be created between the Gobbagombalin Lagoon and the project site south or Gardiner Street on the eastern side of Olympic Highway. The native vegetation zone to be a minimum of 5 metres wide with the eastern edge located a maximum of 2 metres from the cadastral boundary of the road corridor as per Figure 6 (of the ACVAR). This vegetation zone to be rehabilitated through revegetation with local native riparian plant species. The identification of appropriate plant species should be undertaken in consultation with the RAPs and identified Cultural Knowledge Holders. Preference should be given to local First Nations organisations (that meet contract requirements) for engagement for revegetation and landscaping works.	Contractor	Post-construction	N/A
Aboriginal cultural heritage	The development of interpretative signage relevant to Cultural Site A: Women's Business Cultural Tree and surrounding Country to be placed in an appropriate area (the adjacent Wirajduri Walking Track has been highlighted by the identified Cultural Knowledge Holders as the preferred location). The signage to be developed by a cultural heritage values and/or interpretation specialist guided by the identified Cultural Knowledge Holders, the Wagga Wagga Council Elders Heritage Committee, and the RAPs.	Transport	Pre-construction / construction / post-construction	N/A
Aboriginal cultural heritage	The development of interpretative artwork in the Gardiner St pedestrian tunnel that reflects the cultural values of: Cultural Site B: Gobbagombalin Lagoon; Cultural Site E: Gobbagombalin Hill Story Site; Cultural Site F: Cultural Stones; Cultural Site C: Resource and Gathering Area; and surrounding Country. The concept for the artwork and any associated interpretation materials to be developed by the identified Cultural Knowledge Holders, the Wagga Wagga Council Elders Heritage Committee, and	Transport	Pre-construction / construction / post-construction	N/A

Impact	Environmental safeguard	Responsibility	Timing	Reference
	the RAPs. The artwork concept to be implemented by local First Nations artists selected by Transport for NSW in consultation with the identified Cultural Knowledge Holders, the Wagga Wagga Council Elders Heritage Committee, and the RAPs.			
Aboriginal cultural heritage	The development of a booklet highlighting the cultural values and historical records relating to the identified cultural site(s) and the Country they sit within. The booklet to be developed by a cultural values specialist guided by the identified Cultural Knowledge Holders, the Wagga Wagga Council Elders Heritage Committee, and the RAPs. The booklet should be in a format which allows for easy and widespread distribution and considers the needs of First Nations communities. The final format, content, and design to be approved by the identified Cultural Knowledge Holders, the Wagga Wagga Council Elders Heritage Committee, and the RAPs.	Transport	Pre-construction / construction / post-construction	N/A

## Procedure for Aboriginal cultural heritage consultation and investigation – Stage 1

A preliminary assessment for the proposal's ancillary compound areas was undertaken in December 2022, which was based on Stage 1 of the procedure for Aboriginal cultural heritage consultation and investigation (PACHCI). The findings of this assessment are detailed in Appendix 3.

The ancillary compound areas assessed included land at the north-east corner of Boorooma Street and Gardiner Street (North Block), and at the south-east corner of Boorooma Street and Gardiner Street (South Block). These ancillary compound areas are required to support the proposal at both intersections, including site compounds, stockpile areas, parking areas and temporary fencing.

The use of North Block as an ancillary compound area was assessed as being unlikely to have an impact on Aboriginal cultural heritage. The South Block is located within an area of cultural value, and as such, further assessment is recommended in accordance with Stage 2 of the PACHCI.

## Biodiversity assessments

Following feedback during the submissions period (refer to the 'Biodiversity' section above), as well as confirmation of detailed design for the proposal, several biodiversity assessments and reports were developed, including:

- Artificial Shelter Management Strategy – Appendix 4
- Environmental Assessment for Ancillary Sites – Appendix 5
- Flora and Fauna Management Plan – Appendix 6.

A summary of the listed documents is provided below.

### Summary of assessments and reports

#### *Artificial Shelter Management Strategy*

The vegetation disturbance footprint for the proposal comprises the maximum extent of construction, which covers about 22.57 hectares and contains about 2.61 hectares of native vegetation. The preparation of an artificial shelter management strategy was identified as a mitigation measure in the *Olympic Highway Intersections Upgrade - Biodiversity Assessment Report (BAR) (July 2021)* where vegetation clearance activities will impact fauna habitat within the construction footprint. Supplementary habitat features (such as artificial hollows or nest boxes) will be installed in suitable habitat nearby to mitigate impacts to fauna that may be displaced as a result of habitat clearance. Such areas will also provide suitable release sites for any fauna captured during vegetation clearance activities. The artificial shelter specifications, installation procedures and monitoring requirements are detailed in Appendix 4.

#### *Environmental Assessment for Ancillary Sites*

The Environmental Assessment for Ancillary Sites briefing note was prepared by Umwelt to inform works associated with the inclusion of two additional ancillary sites (ON12 and ON13) at the corner of Boorooma Street and Gardiner Street, Wagga Wagga for the proposal. These sites are shown in Figure 10 below. The full assessment is attached as Appendix 5.

Upon completion of the assessment, Transport advised additional lease areas for ON13, as shown in Figure 10 below, bringing the revised additional ancillary site area to 3.82 hectares (compared to the study area of 2.645 hectares). Given the vegetation across the assessed area of ON13 was relatively homogenous and consisted entirely of an assortment of introduced flora species typical to an agricultural area, it is considered that in this instance the results of the assessment could be extrapolated to the additional area ON13.










D:\UMWELT (AUSTRALIA) PTY. LTD\21132 - 03 S&VF R16\21132 - R16 - 1000 ADDITIONAL ANCILLARY SITES\_V2.MXD 24/01/2023 3:03:45 PM



Scale: 225 Dat A4

GDA 1994 MGA Zone 55

**Legend**

-  Watercourses
-  Property Boundaries
-  Ancillary Sites
-  Project Area
-  ON13 - Revised Area

**FIGURE 10**  
Additional Ancillary Sites



## Methodology

A study area was defined for the assessment, which included a total of 2.645 hectares within three lease areas for the proposal, as shown in Figure 10. A review of relevant public databases, literature and regional vegetation mapping was undertaken, as well as a two-day site visit in October 2022, to identify threatened and migratory species, endangered populations, threatened ecological communities (TECs) and their habitats that have previously been recorded within the locality (a 10-kilometre radius around the study area). Threatened species, migratory species, endangered populations and TECs (listed under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth), *Biodiversity Conservation Act 2016* (NSW), or *Fisheries Management Act 1994* (NSW)) that have the potential to occur within the locality were also considered based on the type of habitat present and the Interim Biogeographic Regionalisation for Australia (IBRA) subregion within which the study area occurs.

## Results

Seventy threatened species, one threatened fauna population and seven migratory species were identified from the BioNet Atlas and Protected Matters Search Tool (PMST) searches as known or predicted to occur within the locality. Four TECs were also identified with the database searches as having the potential to occur within the locality. Regional vegetation mapping identified two vegetation communities as potentially occurring within the study area, including:

- Yellow Box Woodland
- non-native vegetation.

However, the site visit confirmed only non-native vegetation occurring within the study area. Additionally, the site visit did not record any TECs. As such, both ON12 and ON13 are suitable for use as ancillary sites.

## Potential impacts

The proposed works for establishing ancillary facilities would require modification of the understorey vegetation within the study area, including stripping of and incidental impact to topsoil, grasses, forbs, small shrubs and juvenile trees in order to facilitate the construction of a suitable hardstand area and placement of site sheds. Two planted native canopy trees (*Casuarina cunninghamia*) are within the study area (ON12 west of Boorooma Street). Transport will avoid works that would require their removal. With the revised area of ON13, up to 3.82 hectares of primarily exotic vegetation would be directly impacted by the proposed works.

No threatened flora species were recorded within the study area during the site visit in October 2022. One threatened flora species, being the Claypan daisy (*Brachyscome muelleroides*), was assessed as having a moderate likelihood of occurrence. Due to the highly disturbed nature of the landscape and dominance of exotic flora, it is unlikely that the study area would support the threatened flora species detailed within Appendix 5.

No threatened fauna species were recorded within the study area during the site visit. Eight threatened fauna species were assessed as having a moderate or higher likelihood of occurrence within the study area, including six bird species and two *Chiroptera* species. No habitat features important to threatened species were identified within the study area during the site visit. With the revised area of ON13, up to 3.82 hectares of potential transitory/foraging habitat for these species would be impacted as part of the proposed works; however, due to the exotic and highly disturbed nature of the landscape and known habitat requirements of threatened fauna species, it is unlikely that the study area would constitute valuable habitat for these species. The removal of understorey vegetation within ancillary sites ON12 and ON13 may result in a marginal reduction of potential sheltering and foraging habitat for terrestrial fauna species, and potentially a small amount of foraging habitat for bird species.

Several potential indirect biodiversity impacts were identified for the proposal, including:

- spread of weeds and exotic species
- spread of pathogens and disease
- changes to the acoustic environment
- changes to the light environment.

#### *Flora and Fauna Management Plan*

A Fauna and Flora Management Plan (FFMP) has been prepared by Umwelt to form part of the CEMP, currently in preparation for early works associated with the proposal. The full FFMP is attached as Appendix 6.

The purpose of the FFMP is to describe how the early works associated with the proposal impact on biodiversity, and measures to minimise and manage such impacts, while ensuring compliance with relevant development approval requirements relating to ecological impacts.

## Noise and vibration assessment

Following feedback during the submissions period (refer to the ‘Noise and vibration’ section above), Umwelt developed an addendum to the previously prepared Umwelt report, ‘Olympic Highway Intersection Upgrades Noise and Vibration Impact Assessment Final August 2021’ (NVIA 2021). This addendum addressed potential traffic noise impacts along Gardiner Street as part of the proposal.

The full ‘Noise and Vibration Impact Assessment – Gardiner Street Addendum’ is attached as Appendix 7 and a summary provided below.

### Summary of methodology

The relevant noise policies and guidelines used for the assessment include:

- NSW Road Noise Policy (RNP), (Department of Environment, Climate Change and Water, 2011)
- Noise Criteria Guideline (NCG), (Roads and Maritime, 2015).

In accordance with the RNP and NCG, Gardiner Street is assessed as a sub-arterial road. The criteria applicable for residences along Gardiner Street is shown in Table 8. Section 3.4 of the RNP notes that where existing traffic noise levels are above the noise assessment criteria, the primary objective is to reduce these through feasible and reasonable measures to meet assessment criteria. Additionally, the RNP states that in assessing feasible and reasonable mitigation measures, an increase of up to 2 dB represents a minor impact that is considered barely perceptible to the average person.

**Table 8 Road Traffic Noise Assessment Criteria for Residential Land Uses (in accordance with the RNP)**

Road Category	Type of project/Land Use	Assessment Criteria	
		Day (7am to 10pm)	Night (10pm to 7am)
Sub-arterial road	Existing residences affected by noise from redevelopment of existing freeway/arteria/sub-arterial roads	60 dB(A) $L_{Aeq}$ (15 hr) (external)	55 dB(A) $L_{Aeq}$ (9 hr) (external)

Consistent with the NVIA 2021, the prediction of the operational road traffic noise levels was undertaken with the proprietary computer noise modelling software SoundPLAN version 8.2, using the Calculation of Road Traffic Noise (CoRTN) calculation method.

The assessment area was restricted to the section of Gardiner Street located between the Olympic Highway and the Hopkirk Street intersection (i.e., west of the North Wagga Wagga suburb).

### Description of existing environment

Additional traffic movements attributed to the proposal are expected along Gardiner Street. For this assessment, Transport provided the traffic volumes shown in Table 9.

**Table 9 Gardiner Street Traffic Volumes**

Year	Case	Day (7am-10pm) Traffic Volume			Night (10pm-7am) Traffic Volume		
		Light Vehicles	Heavy Vehicles	Total Vehicles	Light Vehicles	Heavy Vehicles	Total Vehicles
2026	No Build <sup>1</sup>	1043	120	1163	82	9	91
	Build <sup>2</sup>	3019	202	3221	237	16	253
2036	No Build <sup>1</sup>	1883	202	2086	137	16	153
	Build <sup>2</sup>	3777	254	4031	297	20	317

Note <sup>1</sup> No Build – traffic volumes without the project proceeding

<sup>2</sup> Build – traffic volumes with the project proceeding

### Potential impacts and revised safeguards and management measures

Based upon the traffic volumes in Table 9, the predicted traffic noise levels for the nearest receiver located along Gardiner Street is shown in Table 10.

**Table 10 Predicted Traffic Noise levels, L<sub>Aeq</sub>, dB(A)**

Receiver	Time Period	RNP criteria	Year	No Build	Build	Increase
138 Gardiner Street, North Wagga Wagga	Day (7am-10pm)	60	2026	58	60	2.7
			2036	60	62	1.6
	Night (10pm-7am)	55	2026	49	52	3.4
			2036	52	52	0.9

As shown in Table 10, the predicted traffic noise levels either comply with the criteria (night-time and 2026 daytime) or are below the 2dB increase threshold of the RNP (2036 daytime).

In accordance with the RNP, the project traffic noise levels along Gardiner Street are predicted to be acceptable and have minor impact. As such, no additional safeguards or management measures have been recommended.

## Water and soil assessments

Following confirmation of detailed design for the proposal, several assessments and reports were developed for water and soils, including:

- Stage 2 Contamination Detailed Site Investigation – Appendix 8
- Justification Report for No Stormwater Detention Basin – Appendix 9
- Risk Assessment for No Spill Basin – Appendix 10
- Soil and Water Quality Management Plan– Appendix 11.

A summary of the listed documents is provided below.

### Summary of assessments and reports

#### *Stage 2 Contamination Detailed Site Investigation*

A Stage 2 Contamination Detailed Site Investigation was prepared by DM McMahon Pty Ltd (McMahon) to identify the nature of the potential contamination associated with the proposal and delineate its lateral and vertical extent to a sufficient degree that appropriate site management strategies can be devised, if required. The full investigation is included as Appendix 8.

### Methodology

The scope of work included:

- review the available information regarding historical, current, and proposed land use of the site and surrounds
- review the environmental setting of the site and surrounds
- assess the potential contamination sources and Contaminants of Potential Concern (CoPCs)
- assess the potential contamination source-pathway-receptor linkages from the CoPCs, environmental setting and land use
- formulate a Sampling, Analysis & Quality Plan (SAQP) to investigate the potential contamination based on the recommendations in the Preliminary Site Investigation undertaken by McMahon
- conduct soil sampling across the site for the CoPCs
- collect soil samples for laboratory analysis of the CoPCs
- compare the laboratory and screening results against the adopted criteria
- evaluate Quality Assurance/Quality Control (QA/QC) data to assess the sampling and analysis procedure
- refine a Conceptual Site Model (CSM) to assess potential contamination risk from the source-pathway-receptor linkages
- provide a clear statement on site suitability for the proposed land use or the need for further investigation, remediation, and/or ongoing site management.

## Results

The proposal site has a historical agricultural and commercial land use. The potential contamination sources are persistent material and chemicals that may have accumulated in the fill material and natural soil from previous land uses. Improvements and underground services also are a potential contamination source if they contain hazardous materials. There is limited likelihood of soil contact for future site users or construction workers on the ancillary sites. Soil contact for construction workers at the Travers Street intersection is likely. Groundwater is deep (>8 metres) and is unlikely to be intercepted during development.

Known sources of contamination include:

- fill material including bulk fill, road base and asphalt
- dumped rubbish
- fuel and oil from machinery maintenance
- emissions from vehicles
- pesticides from agricultural land use
- underground services, typically water pipes and comms boxes
- irrigation of treated effluent.

## Potential impacts

The results of the investigation concluded that the identified historical potential contaminating land use is assessed to be of low significance in terms of risk to future site users and the site is suitable for the proposed upgrade.

Unexpected finds are possible during the development and can be managed under an unexpected finds protocol as outlined in Appendix 8. These unexpected finds include but are not limited to:

- buried or surface bonded asbestos containing material, asbestos fines/friable asbestos
- underground services containing asbestos
- building waste and rubbish
- buried organic materials
- stained or deleterious fill and soils
- malodorous fill and soils
- ashy deposits.

### *Justification Report for No Stormwater Detention Basin*

The proposal includes the installation of new pavement for the Old Narrandera Road and Travers Street intersections. The new pavement will increase the impermeable surface surrounding the intersection and result in an increase in stormwater runoff during rainfall events. The consideration of detention basins is a requirement of the TfNSW Specification PS271 Hydrology and Drainage Design (TfNSW, 2020) and the Wagga Wagga City Council Engineering Guidelines for Subdivisions and Development Standards (WWCC, 2017) which specifies the requirement for a detention basin if “an increase in stormwater runoff, from a new development site, has an adverse effect to the receiving stormwater system” due to an increase in impervious area.

A Justification Report for No Stormwater Detention Basin was prepared by Umwelt to inform Transport as to whether a detention basin is required for the proposal. The assessment identified whether the area of new pavement for the Old Narrandera Road and the Travers Street intersection upgrades increased stormwater runoff, subsequently requiring the installation of a detention basin for the proposal. The full report is included as Appendix 9.

## Methodology

The assessment consisted of the following:

- delineating the local catchment areas in which the Old Narrandera Road and Travers Street intersections interact with
- calculating the increase in pavement for the Old Narrandera Road and the Travers Street intersection upgrades
- determining whether there is an adverse effect of stormwater runoff as a result of increased impervious area, within the local catchment.

## Results

The impervious area for the local catchments is assumed to be 50 per cent of the existing pavement area, which is 214 hectares for Old Narrandera Road and 41 hectares for Travers Street. The existing impervious area calculated for the local catchment was combined with the new pavement areas proposed for each intersection, with the assumption that the new pavement would produce 100 per cent of runoff. For the Old Narrandera Road intersection, the increase of pavement of 0.77 hectares results in a new impervious area of 215 hectares. In comparison to the total catchment area, the proposed Old Narrandera Road intersection upgrade will increase the impervious area within the local catchment by an estimated 0.36 per cent. For the Travers Street intersection, the increase of pavement of 0.38 ha results in a new impervious area of 41 hectares. In comparison to the total catchment area, the proposed Travers Street intersection upgrade will increase the impervious area within the local catchment by an estimated 1.11 per cent.

## Potential impacts

The increase in the total pavement area for each of the local catchments is not considered to have an adverse effect on the receiving stormwater drainage system and surrounding environment. No adverse effects are expected due to the insignificant increase in impervious area within the local catchments. Therefore, the proposal is exempt of the Wagga Wagga City Council (2017) requirement for an onsite detention basin.

### *Risk Assessment for No Spill Basin*

An assessment has been carried out to determine whether a spill basin is required for the proposal. Currently there are no spill containment measures in place at the Old Narrandera Road or Travers Street intersections. The upgrades at both intersections will improve the overall safety for all road users, aiming to reduce the likelihood of accidents and reduce congestion at each intersection, including for general traffic, as well as heavy vehicles and vehicles carrying dangerous goods. The upgrades will increase the area of both intersections, as well as improving the interaction of traffic within the intersections. The full assessment is included in Appendix 10.



## Methodology

To identify whether a spill basin is required, the following factors were considered for the Old Narrandera Road intersection and Travers Street intersection upgrades, as per the TfNSW Specification PS271 Hydrology and Drainage Design (TfNSW, 2020):

- potential vehicle conflict areas (i.e., intersections, interchanges)
- road geometry
- heavy vehicle and / or dangerous goods route
- proximity of sensitive receiving environment
- impact on sensitive receiving environment
- topographical or man-made features which may enhance the spill reaching a sensitive area.

## Results

The Old Narrandera Road intersection is located approximately 50 metres from Dukes Creek and Gobbagombalin Lagoon. Any potential spills within the Old Narrandera Road intersection will runoff towards Dukes Creek. The Travers Street intersection is located approximately 550 metres south of the Murrumbidgee River. Any potential spills within the Travers Street intersection will discharge into the Murrumbidgee River.

Potential temporary measures may be able to be put in place to manage spills, with the existing drainage system and depressions within the vicinity the intersections. These potential measures include using the existing depressions to hold a spill, as well as temporary bunding within stormwater channels and drainage to contain runoff. These measures would be sufficient to temporarily contain a spill and allow for efficient clean up.

## Potential impacts

By improving road safety through the development of the proposal, and simplifying traffic flow within and surrounding the intersections, the risk of a spill occurring will be reduced. Consequently, and considering the minor nature of the proposed works, it is deemed not necessary to implement spill containment measures.

### *Soil and Water Quality Management Plan*

A Soil and Water Quality Management Plan (SWQMP) has been prepared by Umwelt to form part of the CEMP, currently in preparation for early works associated with the proposal. The full SWQMP is attached as Appendix 11.

The purpose of the SWQMP is to identify erosion and sediment controls (ESCs) for all stages of the construction of the proposal. The SWQMP includes a Conceptual Erosion and Sediment Control Plan (ESCP), which provides detailed ESCs for all stages of the proposal.

## Environmental management

The REF for the Olympic Highway upgrade identified the framework for environmental management, including safeguards and management measures that would be adopted to avoid or reduce environmental impacts (Section 6 of the REF).

After consideration of the issues raised in the public submissions and further environmental assessments carried out, the safeguard and management measures have been revised. These revisions include additional safeguards and mitigation measures regarding Aboriginal cultural heritage values.

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

### 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 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 before construction of the proposal and must be reviewed and certified by Transport for NSW environment staff before the start of any on-site work. 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 following Transport for NSW Quality Assurance (QA) Specifications:

- 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.

### Summary of safeguards and management measures

The REF for the Olympic Highway upgrade identified a range of environmental outcomes and management measures that would be required to avoid or reduce the environmental impacts.

After consideration of the issues raised in the public submissions, the environmental management measures for the proposal (refer to Section 6 of the REF) have been revised. Should the proposal proceed, the environmental management measures in Table 11 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 11: Summary of environmental safeguards and management measures**

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
GEN1	General – minimise environmental impacts during construction	<p>A CEMP would be prepared and submitted for review and endorsement by Transport for NSW’s Environment Manager prior to the proposal commencing.</p> <p>As a minimum, the CEMP would address:</p> <ul style="list-style-type: none"> <li>• any requirements associated with statutory approvals</li> <li>• details of how the safeguards identified in this REF would be applied</li> <li>• specific environmental management plans to be prepared</li> <li>• roles and responsibilities</li> <li>• communication requirements</li> <li>• induction and training requirements</li> <li>• procedures for monitoring and evaluating environmental performance, and for corrective action</li> <li>• reporting requirements and record-keeping</li> <li>• procedures for emergency and incident management</li> <li>• procedures for audit and review.</li> </ul> <p>The endorsed CEMP would be applied during construction of the proposal.</p>	Contractor	Pre-construction	N/A
GEN2	General – notification	All businesses, residential properties, and other key stakeholders (e.g., schools, local councils) affected by the construction work would be notified at least five days prior to work commencing.	Transport for NSW/ contractor	Pre-construction/ construction	N/A
GEN3	General – environmental awareness	All personnel working on site would receive training to ensure they are aware of the environment protection requirements to be applied during construction of the proposal. This would include site inductions and regular “toolbox” style briefings. Site-specific training would be provided to personnel engaged in activities or areas of higher risk, such as clearing threatened species habitat or during night work.	Contractor	Pre-construction / construction	N/A
B1	Biodiversity	A Flora and Fauna Management Plan (FFMP) would be prepared in accordance with the Transport for NSW <i>Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects</i> (Biodiversity Guidelines) (RTA, 2011a) and applied as part of the CEMP. It would include, but not be limited to:	Contractor	Detailed design / pre-construction	Sections 4.8 and 4.13 of QA Specification G36

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		<ul style="list-style-type: none"> <li>plans showing areas to be cleared and areas to be protected, including exclusion zones, protected habitat features and revegetation areas</li> <li>requirements set out in the Transport for NSW <i>Landscape design guideline</i> (RMS, 2018b)</li> <li>pre-clearing survey requirements</li> <li>procedures for unexpected threatened species finds and fauna handling</li> <li>procedures addressing relevant matters specified in the <i>Policy and guidelines for fish habitat conservation and management</i> (DPI, 2013)</li> <li>protocols to manage weeds and pathogens.</li> </ul>			<i>Environmental Protection</i> (Transport for NSW, 2013 a)
B2	Biodiversity	If any threatened species or ecological communities, not assessed as part of this REF, are identified during construction of the proposal, the unexpected threatened species find procedure described in Guide 1 (pre-clearing process) of the Transport for NSW Biodiversity Guidelines (RTA, 2011a) would be followed.	Contractor	Pre-construction / construction	N/A
B3	Biodiversity	If any residual impacts (which occur after avoidance and mitigation measures are applied) exceed offset thresholds for cleared native vegetation or threatened species habitat, a biodiversity offsets strategy would be prepared during detailed design.	Transport for NSW/ contractor	Detailed design	N/A
B4	Vegetation clearance and habitat removal	Vegetation clearance would be carried out in accordance with Guide 4 (clearing of vegetation and removal of bushrock) of the Transport for NSW Biodiversity Guidelines (RTA, 2011a).	Contractor	Construction	N/A
B5	Vegetation clearance and habitat removal	Native vegetation clearing would be minimised during detailed design and construction of the proposal, particularly important habitat features such as HBTs. Vegetation clearing limit drawings would be developed during detailed design to minimise vegetation clearing outside of the operational boundary and would be in accordance with QA Specification <i>G40 Clearing and Grubbing</i> (Transport for NSW, 2020c). Construction drawings would include clearing limits and environmental no-go zones to be retained as part of the proposal, which would be marked out during construction.	Contractor	Detailed design / pre-construction	N/A

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
B6	Vegetation clearance and habitat removal	Native vegetation and habitat removed as part of the proposal would be replaced or re-established in accordance with Guide 3 (re-establishment of native vegetation) of the Transport for NSW Biodiversity Guidelines (RTA, 2011a).	Contractor	Construction	N/A
B7	Vegetation clearance and habitat removal	Pre-clearing surveys would be carried out in accordance with Guide 1 (pre-clearing process) of the Transport for NSW Biodiversity Guidelines (RTA, 2011a). HBTs to be retained, and habitat trees requiring staged clearing, would be identified and marked during pre-clearing surveys. HBTs to be retained would also be marked in the clearing limit drawings.	Contractor	Pre-construction	N/A
B8	Vegetation clearance and habitat removal	Fallen logs would be retained where possible and be either moved into nearby areas outside the clearing limit but within the construction footprint or stockpiled for later placement as part of the site rehabilitation plan in accordance with Guide 5 (re-use of woody debris and bushrock) of the Transport for NSW Biodiversity Guidelines (RTA, 2011a).	Contractor	Construction	N/A
B9	Removal of threatened species habitat and habitat features	A nest box strategy would be developed and applied, targeting tree-roosting microbats, arboreal mammals and superb parrot; to offset the removal of hollows that are suitable for these species. The strategy would include a new survey of HBTs in the construction boundary to determine the numbers of hollows to be removed. The strategy would be developed in accordance with Guide 8 (nest boxes) of the Transport for NSW Biodiversity Guidelines (RTA, 2011a).	Transport for NSW / contractor	Pre-construction	N/A
B10	Aquatic impacts	Aquatic habitat would be protected in accordance with Guide 10 (aquatic habitats and riparian zones) of the Transport for NSW Biodiversity Guidelines (RTA, 2011a) and Section 3.3.2 (standard precautions and mitigation measures for fish habitat conservation and management) of the <i>Policy and guidelines for fish habitat conservation and management</i> (DPI, 2013 a).	Contractor	Pre-construction / construction	N/A

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
B11	Aquatic impacts	Exclusion zone to be mapped and established in order to prevent direct impacts to Gobbagombalin Lagoon.	Contractor	Pre-construction / construction	N/A
B12	Groundwater dependent ecosystems	Interruptions to water flows associated with groundwater dependent ecosystems would be minimised through changes to proposal design during the detailed design phase of the proposal. The objective of this would be to avoid contamination of downstream groundwater inflows. Refer to Safeguards <b>W4 – W9</b> .	Contractor	Detailed design	N/A
B13	Fragmentation of identified habitat corridors	Following confirmation of operational footprint and clearance areas, complete an assessment of potential impacts on connectivity for squirrel glider, including determination of recommended mitigation measures, if required.	Contractor	Pre-construction / construction	N/A
B14	Fragmentation of identified habitat corridors	Habitat connectivity measures would be applied in accordance with the <i>Wildlife Connectivity Guidelines for Road Projects</i> (RTA, 2011b). Any connectivity measures would be installed under the supervision of an experienced and suitably qualified ecologist.	Contractor	Pre-construction / construction	N/A
B15	Edge effects on nearby native vegetation and habitat	Exclusion zones would be set up at the limit of clearing in accordance with Guide 2 (exclusion zones) of the Transport for NSW Biodiversity Guidelines (RTA, 2011a).	Contractor	Pre-construction / construction	N/A
B16	Injury and mortality of fauna	Any fauna to be handled would be managed in accordance with Guide 9 (fauna handling) of the Transport for NSW Biodiversity Guidelines (RTA, 2011a).	Contractor	Pre-construction / construction	N/A
B17	Injury and mortality of fauna	Where possible, clearing of hollow bearing trees would be carried out outside of the superb parrot breeding season (October – December). Where HBT clearance must be carried out in the breeding season, searches for active nests would be carried out	Contractor	Pre-construction / construction	N/A

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		in accordance with Guide 1 (pre-clearing process) of the Transport for NSW Biodiversity Guidelines (RTA, 2011a).			
B18	Invasion and spread of weeds	Weeds would be managed in accordance with Guide 6 (weed management) of the Transport for NSW Biodiversity Guidelines (RTA, 2011a).	Contractor	Pre-construction / construction	N/A
B19	Invasion and spread of pathogens and disease	Pathogens would be managed in accordance with Guide 2 (exclusion zones) of the Transport for NSW Biodiversity Guidelines (RTA, 2011a).	Contractor	Pre-construction / construction	N/A
B20	Noise, light and vibration	Measures to prevent or minimise reduce noise, light and vibration impacts on areas of habitat would be used, including ensuring adequate distance between equipment and lighting and sensitive receptors, and minimising artificial lighting at night.	Contractor	Construction	N/A
B21	Ancillary sites	In selecting ancillary sites, priority should be given to avoiding areas of native vegetation. Where this cannot be avoided and the area selected has not been included in the construction footprint assessed in this REF, the construction footprint impact must be recalculated in accordance with Transport for NSW Biodiversity Guidelines (RTA, 2011a).	Contractor	Pre-construction / construction	N/A
S1	Soils	<p>A Soil and Water Management Plan (SWMP) would be prepared and applied as part of the CEMP. The SWMP would identify all reasonably foreseeable risks relating to soil erosion, water pollution and hydrology and describe how these risks would be addressed during construction. The plan would include the following general requirements:</p> <ul style="list-style-type: none"> <li>erosion and sedimentation controls would be checked and maintained on a regular basis (including clearing of sediment from behind barriers) with records kept</li> </ul>	Contractor	Detailed design / pre-construction	Section 2.1 of QA Specification G38 Soil and Water Management (Transport for NSW, 2014)



No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		<ul style="list-style-type: none"> <li>erosion and sediment control measures would not be removed until the work is completed, and areas have been stabilised</li> <li>work areas are to be stabilised progressively during the work</li> <li>the maintenance of established stockpile sites would be in accordance with the Roads and Maritime Services Stockpile Site Management Guideline.</li> </ul>			
S2	Soils	<p>An Erosion and Sediment Control Plan (ESCP) would be prepared and applied as part of the SWMP.</p> <p>In accordance with the Landcom (2004) <i>Managing Urban Stormwater: Soils and Construction</i> manual, erosion and sediment control measures would be designed to:</p> <ul style="list-style-type: none"> <li>prevent sediment moving off-site and sediment-laden water entering any watercourse, drainage lines or drain inlets</li> <li>reduce water velocity and capture sediment on site</li> <li>minimise the amount of material transported from site to surrounding pavement surfaces</li> <li>divert clean water around the site.</li> </ul> <p>The ESCP would include arrangements for managing wet weather events, including monitoring of potential high-risk events (such as storms) and specific controls and follow-up measures to be applied in the event of wet weather.</p>	Contractor	Detailed design / Pre-construction	Section 2.2 of QA G38 Soil and Water Management (Transport for NSW, 2014)
S3	Soil quality	Control measures would be used to prevent any materials (e.g., concrete, grout, sediment) being washed into the nearby environment. These measures would be investigated and incorporated into the proposal design.	Contractor	Detailed design / Pre-construction / Construction	N/A
S4	Soil quality	All fuels, chemicals and liquids would be stored in an impervious bunded area.	Contractor	Construction	N/A
S5	Soil quality	Refuelling of plant and equipment would occur in impervious bunded areas.	Contractor	Construction	N/A
S6	Soil quality	Vehicle wash down and/or cement truck washout would occur in a designated bunded area.	Contractor	Construction	N/A

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
S7	Soil quality	If an incident (e.g., spill) occurs, the Transport for NSW <i>Environmental Incident Classification and Reporting Procedure</i> (RMS, 2018a) would be followed, and Transport for NSW's Contract Manager notified as soon as practicable.	Contractor	Construction	N/A
S8	Accidental spill	A site-specific emergency spill plan would be developed. The plan would include spill management measures in accordance with the Transport for NSW <i>Code of Practice for Water Management</i> (RTA, 1999) and relevant EPA guidelines. The plan would address measures to be applied in the event of a spill, including initial response and containment, notification of emergency services and relevant authorities (including Transport for NSW and EPA officers).	Contractor	Detailed design / Pre-construction	Section 4.3 of QA Specification G36 <i>Environmental Protection</i> (Transport for NSW, 2013 a)
S9	Accidental spill	An emergency spill kit would be kept on site at all times and maintained throughout the construction period. The spill kit would be appropriately sized for the volume of substances at the work site. All workers would be advised of the location of the spill kit and trained in its use.	Contractor	Construction	N/A
S10	Contaminated land	A Contaminated Land Management Plan (CLMP) would be prepared in accordance with the Transport for NSW <i>Guideline for the Management of Contamination</i> (RMS, 2013) and applied as part of the CEMP. The CLMP would include, but not be limited to: <ul style="list-style-type: none"> <li>capture and management of any surface run-off contaminated by exposure to the contaminated land</li> <li>further investigations required to determine the extent, concentration and type of any contamination, as identified in the detailed site investigation (Phase 2)</li> <li>management of the remediation and subsequent validation of any contaminated land, including any certification required</li> <li>measures to ensure the safety of site personnel and local communities during construction</li> </ul>	Contractor	Pre-construction / Construction	Section 4.2 of QA Specification G36 <i>Environmental Protection</i> (Transport for NSW, 2013 a)

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		<ul style="list-style-type: none"> <li>disposal requirements of any contaminated materials.</li> </ul>			
S11	Contaminated land	If contaminated areas are encountered during construction, appropriate control measures would be applied to manage the immediate risks of contamination. All other work that may impact on the contaminated area would cease until the nature and extent of the contamination has been confirmed and any necessary site-specific controls or further actions identified in consultation with the Transport for NSW Environment Manager and/or EPA.	Contractor	Construction	Section 4.2 of QA Specification G36 <i>Environmental Protection</i> (Transport for NSW, 2013 a)
S12	Acid sulfate soils	Potential or actual Acid Sulfate Soils (ASS) would be managed in accordance with the Transport for NSW <i>Guidelines for the Management of Acid Sulfate Materials</i> (RTA, 2005).	Contractor	Pre-construction / construction	N/A
W1	Water	A SWMP would be prepared and applied as part of the CEMP. The SWMP would identify all reasonably foreseeable risks relating to soil erosion, water pollution and hydrology and describe how these risks would be addressed during construction.	Contractor	Detailed design / pre-construction	Section 2.1 of QA Specification G38 <i>Soil and Water Management</i> (Transport for NSW, 2014)
W2	Flooding	The head contractor would consider flooding risk during selection of ancillary sites. Some of the potential ancillary sites are located on the Murrumbidgee River floodplain, while others are not.	Contractor	Pre-construction	N/A
W3	Flooding	An emergency evacuation procedure would be prepared as part of the CEMP and applied if needed. The procedure would provide response instructions to site personnel in the event of a flood during construction. The aim of the procedure	Contractor	Pre-construction	N/A

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		would be to evacuate all site personnel safely, as well as minimise potential environmental impacts associated with construction machinery and plant where possible.			
W4	Water quality	There would be no release of dirty water into drainage lines and/or waterways. Visual monitoring of any water discharge and local water quality would be carried out on a regular basis to identify any potential spills or deficient erosion and sediment controls.	Contractor	Construction	N/A
W5	Water quality	Water quality control measures would be used to prevent any materials (e.g., concrete, grout, sediment) entering drain inlets, drainage lines or waterways. These measures would be investigated and incorporated into the pavement drainage system where it discharges to drainage lines.	Contractor	Detailed design / Pre-construction / Construction	N/A
W6	Water quality	All fuels, chemicals and liquids would be stored in an impervious bunded area a minimum of 50 m away from: <ul style="list-style-type: none"> <li>• rivers, creeks, lagoons, or any areas of concentrated water flow</li> <li>• flooded or poorly drained areas</li> <li>• slopes above 10%.</li> </ul>	Contractor	Construction	N/A
W7	Water quality	Refuelling of plant and equipment would occur in impervious bunded areas located a minimum of 50 m from drainage lines or waterways.	Contractor	Construction	N/A
W8	Water quality	Vehicle wash down and/or cement truck washout would occur in a designated bunded area.	Contractor	Construction	N/A
W9	Water quality	If an incident (e.g., spill) occurs, the Transport for NSW <i>Environmental Incident Classification and Reporting Procedure</i> (RMS, 2018a) would be followed, and Transport for NSW's Contract Manager notified as soon as practicable.	Contractor	Construction	N/A

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
TT1	Traffic and transport	<p>A Traffic Management Plan (TMP) would be prepared and implemented as part of the CEMP. The TMP would be prepared in accordance with <i>Traffic control at work sites: Technical Manual</i> (Transport for NSW, 2020d), <i>QA Specification G10 Traffic Management</i> (Transport for NSW, 2010) and <i>AS 1742.3:2019 Manual of uniform traffic control devices: Traffic control for works on roads</i>.</p> <p>The TMP would include:</p> <ul style="list-style-type: none"> <li>• confirmation of haulage routes</li> <li>• measures to maintain access to local roads and properties</li> <li>• site specific traffic control measures to manage and regulate traffic movement, including signage</li> <li>• measures to maintain pedestrian and cyclist access</li> <li>• requirements and methods to consult and inform the local community of impacts on the local road network.</li> <li>• access to construction sites including entry and exit locations and measures to prevent construction vehicles queuing on public roads</li> <li>• a response plan for any construction traffic incident</li> <li>• consideration of other developments that may be under construction to minimise traffic conflict and congestion that may occur due to the cumulative increase in construction vehicle traffic</li> <li>• monitoring, review and amendment mechanisms.</li> </ul> <p>The TMP would also include a Traffic Guidance Scheme that provides a visual representation of the traffic control devices to be used to change existing road/footpath conditions to allow the work to be carried out safely.</p>	Contractor	Detailed design / Pre-construction	N/A
TT2	Private property access	Property access would be maintained throughout the construction period and property owners would be consulted before starting any work that may temporarily impact their access.	Contractor	Construction	N/A
TT3	Public transport infrastructure	Local school bus operators would be consulted to ensure continued access throughout the construction period.	Contractor	Construction	N/A

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
NV1	Airborne Noise and ground-borne noise and vibration	<p>Notification detailing work activities, dates and hours, impacts and mitigation measures, indication of work schedule over the night time period, any operational noise benefits from the works (where applicable) and contact telephone number. Notification should be a minimum of 7 calendar days prior to the start of works. Other consultation methods may be required including:</p> <ul style="list-style-type: none"> <li>• website (if required)</li> <li>• contact telephone number for community</li> <li>• email distribution list (if required)</li> <li>• community drop in session (if required by approval conditions).</li> </ul>	Transport for NSW	Pre-construction	Transport for NSW's Construction Noise and Vibration Guideline (CNVG; RMS, 2016f) Appendix B Standard Mitigation Measure
NV2	Airborne Noise and ground-borne noise and vibration	<p>All employees, contractors and subcontractors are to receive an environmental induction. The induction must at least include:</p> <ul style="list-style-type: none"> <li>• all project specific and relevant standard noise and vibration mitigation measures</li> <li>• relevant licence and approval conditions</li> <li>• permissible hours of work</li> <li>• any limitations on high noise generating activities</li> <li>• location of nearest sensitive receivers</li> <li>• construction employee parking areas</li> <li>• designated loading/unloading areas and procedures</li> <li>• site opening/closing times (including deliveries)</li> <li>• environmental incident procedures.</li> </ul>	Contractor	Pre-construction	CNVG Appendix B Standard Mitigation Measure
NV3	Airborne noise	<p>No swearing or unnecessary shouting or loud stereos/radios on site. No dropping of materials from height, throwing of metal items and slamming of doors.</p>	Contractor	Construction	CNVG Appendix B Standard

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
					Mitigation Measure
NV4	Ground-borne noise and vibration	Attended vibration measurements should be undertaken at the commencement of vibration generating activities to confirm that vibration levels are within the acceptable range to prevent cosmetic building damage.	Contractor	Construction	CNVG Appendix B Standard Mitigation Measure
NV5	Airborne noise and ground-borne noise and vibration	The CEMP must be regularly updated to account for changes in noise and vibration management issues and strategies.	Contractor	Construction	CNVG Appendix B Standard Mitigation Measure
NV6	Vibration	Undertake building dilapidation surveys on all buildings located within the buffer zone with the potential to cause property damage prior to the commencement of activities.	Contractor	Pre-construction	CNVG Appendix B Standard Mitigation Measure
NV7	Airborne noise and ground-borne noise and vibration	Where feasible and reasonable, construction should be carried out during the standard daytime working hours. Work generating high noise and/or vibration levels should be scheduled during less sensitive time periods.	Contractor	Construction	CNVG Appendix B Standard Mitigation Measure
NV8	Airborne noise and ground-borne noise and vibration	Use quieter and less vibration emitting construction methods where feasible and reasonable. Ensure plant including the silencer is well maintained.	Contractor	Construction	CNVG Appendix B Standard



No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
					Mitigation Measure
NV9	Airborne noise	The noise levels of plant and equipment must have operating Sound Power or Sound Pressure Levels compliant with the criteria in Appendix H of the CNVG. Implement a noise monitoring audit program to ensure equipment remains within the more stringent of the manufacturers specifications or Appendix H of the CNVG.	Contractor	Construction	CNVG Appendix B Standard Mitigation Measure
NV10	Airborne noise	The noise levels of plant and equipment items are to be considered in rental decisions and in any case cannot be used on site unless compliant with the criteria in Table 2 of the CNVG.	Contractor	Construction	CNVG Appendix B Standard Mitigation Measure
NV11	Airborne noise	The offset distance between noisy plant and nearby sensitive receivers is to be maximised. Plant used intermittently to be throttled down or shut down. Noise-emitting plant to be directed away from sensitive receivers. Only have necessary equipment on site.	Contractor	Construction	CNVG Appendix B Standard Mitigation Measure
NV12	Airborne noise and ground-borne vibration	Locate compounds away from sensitive receivers and discourage access from local roads. Plan traffic flow, parking and loading/unloading areas to minimise reversing movements within the site. Where additional activities or plant may only result in a marginal noise increase and speed up works, consider limiting duration of impact by concentrating noisy activities at one location and move to another as quickly as possible. Very noisy activities should be scheduled for normal working hours. If the work can not be undertaken during the day, it should be completed before 11:00pm.	Contractor	Pre-construction / construction	CNVG Appendix B Standard Mitigation Measure

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		<p>Where practicable, work should be scheduled to avoid major student examination periods when students are studying for examinations such as before or during Higher School Certificate and at the end of higher education semesters.</p> <p>If programmed night work is postponed the work should be re-programmed and the approaches in this guideline apply again.</p>			
NV13	Airborne noise and ground-borne vibration	Use only the necessary size and power of plant and equipment needed.	Contractor	Construction	CNVG Appendix B Standard Mitigation Measure
NV14	Airborne noise	<p>Non-tonal reversing beepers (or an equivalent mechanism) must be fitted and used on all construction vehicles and mobile plant regularly used on site and for any out of hours work.</p> <p>Consider the use of ambient sensitive alarms that adjust output relative to the ambient noise level.</p>	Contractor	Construction	CNVG Appendix B Standard Mitigation Measure
NV15	Airborne noise	<p>Loading and unloading of materials/deliveries is to occur as far as possible from sensitive receivers.</p> <p>Select site access points and roads as far as possible away from sensitive receivers.</p> <p>Dedicated loading/unloading areas to be shielded if close to sensitive receivers.</p> <p>Delivery vehicles to be fitted with straps rather than chains for unloading, wherever possible.</p> <p>Avoid or minimise these out of hours movements where possible.</p>	Contractor	Construction	CNVG Appendix B Standard Mitigation Measure
NV16	Airborne noise Ground-borne vibration	<p>The noise and vibration impacts of blasting operations can be minimised by:</p> <ul style="list-style-type: none"> <li>choosing the appropriate blast charge configurations</li> <li>ensuring appropriate blast-hole preparation</li> <li>optimising blast design, location, orientation and spacing</li> </ul>	Contractor	Construction	CNVG Appendix B Standard Mitigation Measure

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		<ul style="list-style-type: none"> <li>selecting appropriate blast times, and</li> <li>utilising knowledge of prevailing meteorological conditions.</li> </ul> <p>Australian Standard (AS) 2187.2-2006 <i>Explosives-Storage, transport and use, Part 2: Use of Explosives</i> provides more detailed advice on ground vibration and airblast overpressure impact minimisation options.</p>			
NV17	Construction vehicles	Limit the use of engine compression brakes at night and in residential areas. Ensure vehicles are fitted with a maintained Original Equipment Manufacturer exhaust silencer or a silencer that complies with the National Transport Commission's 'In-service test procedure' and standard.	Contractor	Construction	CNVG Appendix B Standard Mitigation Measure
NV18	Airborne noise	Stationary noise sources should be enclosed or shielded where feasible and reasonable whilst ensuring that the occupational health and safety of workers is maintained. Appendix D of AS 2436-2010 <i>Guide to noise and vibration control on construction, demolition and maintenance sites</i> lists materials suitable for shielding.	Contractor	Construction	CNVG Appendix B Standard Mitigation Measure
NV19	Airborne noise	Use structures to shield residential receivers from noise such as site shed placement; earth bunds; fencing; erection of operational stage noise barriers (where practicable) and consideration of site topography when siting plant.	Contractor	Construction	CNVG Appendix B Standard Mitigation Measure
NV20	Ground-borne vibration	Pre-construction surveys of the structural integrity of vibration sensitive buildings may be warranted. At locations where there are high-risk receptors, vibration monitoring should be conducted during the activities causing vibration.	Contractor	Pre-construction	CNVG Appendix B Standard Mitigation Measure

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
NV21	General	<p>A Noise and Vibration Management Plan (NVMP) will be prepared and implemented as part of the CEMP. The NVMP will generally follow the approach in the ICNG and identify:</p> <ul style="list-style-type: none"> <li>• all potential significant noise and vibration generating activities associated with the project</li> <li>• feasible and reasonable mitigation measures to be implemented</li> <li>• a monitoring program to assess performance against relevant noise and vibration criteria</li> <li>• arrangements for consultation with affected neighbours and sensitive receivers, including notification and complaint handling procedures</li> <li>• contingency measures to be implemented in the event of non-compliance with noise and vibration criteria.</li> </ul>	Contractor	Pre-construction	Additional safeguard
NV22	Ground-borne vibration	<p>Vibration generating plant not listed in Table 5.16 of the Noise and Vibration Impact Assessment (NVIA) (Appendix I of the REF) should not be used within the identified safe working distances. If vibratory rollers or other vibration inducing construction sources are required within the safe working distances for heritage structures nominated in Table 5.17 of the NVIA the following is recommended:</p> <ul style="list-style-type: none"> <li>• an independent specific structural assessment is undertaken on the structure to ascertain the structural integrity and its ability to withstand vibration, and establishment of an appropriate vibration criterion.</li> <li>• a dilapidation survey is undertaken on the structure prior to works commencing, and regular inspection of the structure throughout the construction activities.</li> <li>• pre-construction vibration monitoring to establish baseline vibration impacts induced on the structure from road traffic.</li> <li>• where appropriate, continuous vibration monitoring is conducted on the structure for the duration of the period of construction while vibration generating equipment is used. The vibration logger should be equipped with the facility to remotely alert the site to reduce or cease construction activities if vibration levels are approaching the criterion threshold.</li> </ul>	Contractor	Construction	Additional safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		<ul style="list-style-type: none"> <li>stationary noise sources should be enclosed or shielded where feasible or reasonable.</li> </ul>			
NV23	Horses	Noise level monitoring to establish existing noise level exposure for horses at the racecourse.	Contractor	Construction	Additional safeguard
NV24	Horses	Noise level monitoring during high noise construction activities to establish the noise level exposure for horses at the racecourse and their response to the noise.	Contractor	Construction	Additional safeguard
NV25	Horses	Reasonable and feasible mitigation measures to reduce the construction noise levels onto the racecourse.	Contractor	Construction	Additional safeguard
NV26	Out of hours construction	Out of hours construction noise in Out of Hours Work (OOHW) Period 1 shall be limited to no more than three consecutive evenings per week except where there is a Duration Respite. For night work these periods of work should be separated by not less than one week and no more than 6 evenings per month.	Contractor	Construction	CNVG Appendix C Standard Mitigation Measure
NV27	Night time construction	Night time construction noise in OOWH Period 2 shall be limited to two consecutive nights except for where there is a Duration Respite. For night work these periods of work should be separated by not less than one week and 6 nights per month. Where possible, high noise generating works shall be completed before 11pm.	Contractor	Construction	CNVG Appendix C Standard Mitigation Measure
AH1	Aboriginal cultural heritage	The <i>Heritage Procedure 2: Unexpected Heritage Items</i> (RMS, 2015a) would be followed if an unknown or potential Aboriginal object/s, including skeletal remains, is found during construction. This applies where Transport for NSW 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 would immediately cease in the vicinity of the object/find and Transport for NSW's Senior Environment Specialist – Heritage would be contacted immediately.	Contractor	Detailed design / pre-construction	Section 4.9 of QA Specification G36 <i>Environmental Protection</i>

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		Work would only restart once the requirements of that Procedure have been satisfied.			(Transport for NSW, 2013 a)
AH2	Aboriginal cultural heritage	The route of the Wiradjuri Walking Track adjacent to Travers Street intersection can be temporarily relocated, as long as the link is maintained, and then the track must be reinstated following completion of construction.	Contractor	Construction	AH2: Additional safeguard
<b>AH3</b>	<b><u>Aboriginal cultural heritage</u></b>	<b><u>An Aboriginal Heritage Management Plan (AHMP) should be prepared and implemented as part of the Construction Environmental Management Plan (CEMP). The AHMP should provide specific guidance on measures and controls to be undertaken to avoid and mitigate impacts on Aboriginal cultural heritage during construction. This should include protection measures to be applied during construction, including but not limited to the recommendations set out in this table, as well as contractor training in general Aboriginal cultural heritage awareness and management of Aboriginal heritage values.</u></b>	<b><u>Contractor / Transport</u></b>	<b><u>Pre-construction / construction</u></b>	<b><u>N/A</u></b>
<b>AH4</b>	<b><u>Aboriginal cultural heritage</u></b>	<b><u>An Aboriginal Cultural Heritage awareness training package should be delivered as part of the site induction for all contractor(s) and maintenance personnel involved in the construction works. The training package should be informed by the Cultural Values Assessment Report and be developed by Transport for NSW in consultation with the project RAPs and identified Cultural Knowledge Holders to ensure that it is specific to the Country that the project is located within. The training package should at a minimum ensure awareness of the cultural significance of the project area, the requirements of the AHMP and relevant statutory responsibilities, and the identification of unexpected heritage items and appropriate management procedures.</u></b>	<b><u>Contractor</u></b>	<b><u>Pre-construction / construction</u></b>	<b><u>N/A</u></b>
<b>AH5</b>	<b><u>Aboriginal cultural heritage</u></b>	<b><u>Rehabilitation and revegetation of impacted areas (outside road corridor) within or adjacent to cultural site(s) should occur with local native plant species at completion of construction works. The identification of appropriate plant species</u></b>	<b><u>Contractor / Transport</u></b>	<b><u>Post-construction</u></b>	<b><u>N/A</u></b>

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		<u>should be undertaken in consultation with the RAPs and identified Cultural Knowledge Holders. Preference should be given to local First Nations organisations (that meet contract requirements) for engagement for revegetation and landscaping works.</u>			
<u>AH6</u>	<u>Aboriginal cultural heritage</u>	<u>Transport to facilitate local First Nations community organisations having the opportunity to acquire timber from any trees removed during the works for cultural re-use.</u>	<u>Contractor</u>	<u>Pre-construction / construction</u>	<u>N/A</u>
<u>AH7</u>	<u>Aboriginal cultural heritage</u>	<u>The AHMP should provide for an addition to the Unexpected Heritage Items Procedure 2015 to require the notification of the identified Cultural Knowledge Holders within 48 hours of any discovery of potential archaeological Aboriginal ancestral remains during the proposed works.</u>	<u>Contractor / Transport</u>	<u>As required</u>	<u>N/A</u>
<u>AH8</u>	<u>Aboriginal cultural heritage</u>	<u>If there is a confirmed discovery of archaeological Aboriginal ancestral remains it is recommended that consultation occur with the RAPs and identified Cultural Knowledge Holders to inform: the development of a Management Plan for proposed works in the relevant area; cultural ceremonies in relation to the ancestral remains and the site of their occurrence; and, repatriation of the ancestral remains.</u>	<u>Transport</u>	<u>As required</u>	<u>N/A</u>
<u>AH9</u>	<u>Aboriginal cultural heritage</u>	<u>In relation to all identified cultural sites:</u> <ul style="list-style-type: none"> <li><u>the site(s) be marked on all operational maps as area(s) of environmental and heritage sensitivities.</u></li> <li><u>the detailed design should aim to minimise the impact of the construction footprint on the cultural site(s).</u></li> <li><u>effective protective fencing should be erected between the zone of construction activity and the unimpacted area of the site prior to any construction activities.</u></li> <li><u>the location and erection of the temporary fencing to be approved by the Transport for NSW Project Senior Environmental and Sustainability Officer</u></li> </ul>	<u>Transport</u>	<u>Pre-construction</u>	<u>N/A</u>



No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		<u>and the Transport for NSW Aboriginal Cultural Heritage Officer. This will be documented and sent to the project RAPs and Cultural Knowledge Holders (through the provision of mapping and photographs by Transport for NSW).</u>			
<b>AH10</b>	<b><u>Aboriginal cultural heritage</u></b>	<b><u>A native vegetation zone to be created between the Gobbagombalin Lagoon and the project site south of Gardiner Street on the eastern side of Olympic Highway. The native vegetation zone to be a minimum of 5 metres wide with the eastern edge located a maximum of 2 metres from the cadastral boundary of the road corridor as per Figure 6 (of the ACVAR). This vegetation zone to be rehabilitated through revegetation with local native riparian plant species. The identification of appropriate plant species should be undertaken in consultation with the RAPs and identified Cultural Knowledge Holders. Preference should be given to local First Nations organisations (that meet contract requirements) for engagement for revegetation and landscaping works.</u></b>	<b><u>Transport</u></b>	<b><u>Post-construction</u></b>	<b><u>N/A</u></b>
<b>AH11</b>	<b><u>Aboriginal cultural heritage</u></b>	<b><u>The development of interpretative signage relevant to Cultural Site A: Women's Business Cultural Tree and surrounding Country to be placed in an appropriate area (the adjacent Wirajduri Walking Track has been highlighted by the identified Cultural Knowledge Holders as the preferred location). The signage to be developed by a cultural heritage values and/or interpretation specialist guided by the identified Cultural Knowledge Holders, the Wagga Wagga Council Elders Heritage Committee, and the RAPs.</u></b>	<b><u>Transport</u></b>	<b><u>Pre-construction / construction / post-construction</u></b>	<b><u>N/A</u></b>
<b>AH12</b>	<b><u>Aboriginal cultural heritage</u></b>	<b><u>The development of interpretative artwork in the Gardiner St pedestrian tunnel that reflects the cultural values of: Cultural Site B: Gobbagombalin Lagoon; Cultural Site E: Gobbagombalin Hill Story Site; Cultural Site F: Cultural Stones; Cultural Site C: Resource and Gathering Area; and surrounding Country. The concept for the artwork and any associated interpretation materials to be developed by the identified Cultural Knowledge Holders, the Wagga Wagga Council Elders Heritage</u></b>	<b><u>Contractor / Transport</u></b>	<b><u>Pre-construction / construction / post-construction</u></b>	<b><u>N/A</u></b>

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		<b><u>Committee, and the RAPs. The artwork concept to be implemented by local First Nations artists selected by Transport for NSW in consultation with the identified Cultural Knowledge Holders, the Wagga Wagga Council Elders Heritage Committee, and the RAPs.</u></b>			
<b>AH13</b>	<b><u>Aboriginal cultural heritage</u></b>	<b><u>The development of a booklet highlighting the cultural values and historical records relating to the identified cultural site(s) and the Country they sit within. The booklet to be developed by a cultural values specialist guided by the identified Cultural Knowledge Holders, the Wagga Wagga Council Elders Heritage Committee, and the RAPs. The booklet should be in a format which allows for easy and widespread distribution and considers the needs of First Nations communities. The final format, content, and design to be approved by the identified Cultural Knowledge Holders, the Wagga Wagga Council Elders Heritage Committee, and the RAPs.</u></b>	<b><u>Contractor / Transport</u></b>	<b><u>Pre-construction / construction / post-construction</u></b>	<b><u>N/A</u></b>
NAH1	Non-Aboriginal heritage	The <i>Heritage Procedure 2: Unexpected Heritage Items</i> (RMS, 2015a) would be followed if any unexpected heritage items, archaeological remains or potential relics of non-Aboriginal origin are encountered. Work would immediately cease in the vicinity of the material/find and Transport for NSW's Senior Environment Specialist – Heritage would be contacted immediately.  Work would only recommence once the requirements of that Procedure have been satisfied.	Contractor	Detailed design / pre-construction	Section 4.10 of QA Specification G36 <i>Environmental Protection</i> (Transport for NSW, 2013 a)
LCVA1	Landscape character and visual amenity	Tree clearing would be minimised to reduce impacts to landscape character and visual amenity. The proposal design would be refined to maximise tree retention and minimise the need for removal of native vegetation, including for selection of ancillary sites.	Contractor	Detailed design / pre-construction	N/A

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
LCVA2	Landscape character and visual amenity	<p>Any vegetation offset planting would be designed to offset visual impacts where possible. This may be able to be coordinated with any Council landscape improvement work being done at the same time as the proposal construction. If possible, vegetation offsetting would include:</p> <ul style="list-style-type: none"> <li>replanting the vegetation screen removed from the north-western corner of the Old Narrandera Road intersection</li> <li>replanting areas affected by tree removal along Dukes Creek, the Wiradjuri Walking Track and Gobbagombalin Bridge</li> <li>incorporating street trees around the MTC.</li> </ul> <p>Section 6.1 of the REF provides information on offsets that may be required to offset biodiversity impacts of the proposal.</p>	Contractor	Construction	N/A
LCVA3	Landscape character and visual amenity	The expanse of open space that would remain once the Travers Street alignment has been relocated would be considered for opportunities to improve landform and visual amenity in the proposal area.	Contractor	Detailed design / pre-construction	N/A
LCVA4	Landscape character and visual amenity	Any existing graffiti in the operational footprint would be removed in accordance with Transport for NSW and/or Council standard requirements.	Transport for NSW	Pre-construction / operation	N/A
LCVA5	Light spill	Construction work would be carried out during standard working hours when possible. Where temporary construction lighting is required, measures to minimise light spill, such as using non-reflective materials and screens, would be applied where appropriate. All lighting would be designed and installed in accordance with AS 4282:2019 <i>Control of the obtrusive effects of outdoor lighting</i> .	Contractor	Construction	N/A
LCVA6	Visual clutter	Visual clutter would be reduced by minimising new fencing and signage, including around the horse crossing point on Travers Street. The design would be refined with preference given to fencing alternatives such as mounding and landscaping to direct horse riders and provide a safe and preferred environment for the horses.	Contractor	Pre-construction / construction	N/A

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
PLU1	Property acquisition	All property acquisition would be carried out in accordance with the Transport for NSW <i>Land acquisition information guide</i> (RMS, 2014b) and NSW <i>Land Acquisition (Just Terms Compensation) Act 1991</i> .	Transport for NSW	Pre-construction / construction	N/A
PLU2	Temporary utility service interruption	Prior to the commencement of work, the location of existing utilities and relocation details would be confirmed following consultation with the affected utility owners. If the scope or location of proposed utility relocation work falls outside the assessed proposal scope and footprint, further assessment would be carried out.	Contractor	Detailed design / pre-construction	N/A
PLU3	Temporary utility service interruption	Measures for the notification of residents for any temporary utility service interruptions would be included in the CEMP.	Contractor	Pre-construction / construction	N/A
AQ1	Air quality	An Air Quality Management Plan (AQMP) would be prepared and applied as part of the CEMP. The AQMP would include, but not be limited to, description of the following: <ul style="list-style-type: none"> <li>• potential sources of air pollution</li> <li>• air quality management objectives consistent with any relevant published EPA guidelines</li> <li>• mitigation and dust suppression measures to be installed</li> <li>• methods to manage work during strong winds or other adverse weather conditions</li> <li>• a progressive rehabilitation strategy for exposed surfaces.</li> </ul>	Contractor	Pre-construction / construction	Section 4.4 of QA Specification G36 <i>Environmental Protection</i> (Transport for NSW, 2013 a)
AQ2	Dust emissions	Stockpiles, unsealed roads and other areas that may generate dust would be managed to suppress dust emissions.	Contractor	Construction	N/A
AQ3	Dust emissions	The CEMP would include provision for managing dust nuisance complaints during the proposal construction period.	Contractor	Pre-construction / construction	N/A

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
AQ4	Plant and equipment emissions	Onsite machinery would be run efficiently to ensure optimal performance, minimal down time, and high fuel efficiency.	Contractor	Construction	N/A
AQ5	Vehicle emissions	Vehicles transporting waste or other materials that may produce odours or dust are to be covered during transportation.	Contractor	Construction	N/A
RW1	Waste generation	<p>A Waste Management Plan (WMP) would be prepared and applied as part of the CEMP in accordance with the Transport for NSW <i>Technical Guide: Management of road construction and maintenance wastes</i> (RMS, 2016e). The WMP would include but not be limited to:</p> <ul style="list-style-type: none"> <li>• measures to avoid and minimise waste associated with the proposal</li> <li>• classification of wastes and management options (reuse, recycle, stockpile, disposal)</li> <li>• statutory approvals required for managing both on and off-site waste, or applications of any relevant resource recovery exemptions</li> <li>• procedures for storage, transport and disposal</li> <li>• monitoring, record keeping and reporting.</li> </ul> <p>The WMP would be prepared taking into account <i>Environmental Procedure: Management of Wastes on Roads and Maritime Services Land</i> (RMS, 2014a) and relevant Transport Waste factsheets.</p>	Contractor	Pre-construction / construction	Section 4.11 of QA Specification G36 <i>Environmental Protection</i> (Transport for NSW, 2013 a)
RW2	Waste generation	Waste material, other than vegetation and tree mulch, would not be left on site once work has been completed. Construction waste would not be disposed or reused onto other land. Waste would not be burnt on site.	Contractor	Construction	N/A
RW3	Waste generation	Waste accumulation, littering and general tidiness would be monitored during routine site inspections and managed accordingly. Working areas would be cleaned up at the end of each working day.	Contractor	Construction	N/A

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
RW4	Waste generation	Any asbestos would be removed in accordance with asbestos Model Codes of Practice published by Safe Work Australia.	Contractor	Pre-construction / construction	N/A
RW5	Resource use	<p>Resource management hierarchy principles would be followed:</p> <ul style="list-style-type: none"> <li>• avoidance of unnecessary resource consumption is priority</li> <li>• avoidance is followed by resource recovery (including reuse of materials, reprocessing, recycling and energy recovery)</li> <li>• disposal is carried out as a last resort.</li> </ul> <p>Recycled, durable, and low embodied energy products would be used to reduce primary resource demand in instances where the materials are cost and performance competitive and comparable in environmental performance to alternatives (e.g., where quality control specifications allow).</p>	Contractor	Construction	N/A
RW6	Resource use	If vegetation is to be mulched and transported off site for beneficial reuse, it would be assessed for the presence of weeds, pests and diseases.	Contractor	Construction	N/A
SE1	Socio-economic	<p>A Complaints Register (CR) would be prepared and applied as part of the CEMP to help provide timely and accurate information to the community during construction. The CR would include (as a minimum):</p> <ul style="list-style-type: none"> <li>• mechanisms to provide details and timing of proposed activities to affected residents, including changed traffic and access conditions</li> <li>• contact name and number for further information or complaints.</li> </ul>	Contractor	Detailed design / pre-construction	N/A
SE2	Socio-economic	Transport for NSW would continue to provide consistent messaging and information to the community throughout construction. Early notification would be provided regarding any road closures, expected traffic interruptions or night work.	Transport for NSW	Pre-construction / construction	N/A
SE3	Socio-economic	Transport for NSW would continue to engage with key stakeholders regarding potential impacts, such as the MTC and horse owners/jockeys about changes to MTC access and temporary closure of the horse underpass during construction.	Transport for NSW	All stages	N/A

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
SE4	Socio-economic	Labour, services and goods would be sourced from the local market where feasible, reasonable and cost effective.	Contractor	Pre-construction / construction	N/A
CCI1	Plant and vehicle emissions	Transport for NSW would complete a greenhouse gas assessment using the Carbon Estimate and Reporting Tool (CERT) as per the CERT Manual (Transport for NSW, 2017 a). This would ensure that greenhouse gas emissions from the proposal are measured and reported in a manner consistent with other Transport for NSW projects. The assessment would be used to inform avoidance and mitigation measures to be installed during construction.	Transport for NSW	Pre-construction / operation	N/A
CCI2	Plant and vehicle emissions	An AQMP would be prepared and applied as part of the CEMP. In addition to the air quality safeguards listed in Section 6.10 of the REF, the AQMP would include description of the following: <ul style="list-style-type: none"> <li>• potential sources of vehicle emissions</li> <li>• options for using low emission plant and vehicles</li> <li>• mitigation measures to be applied.</li> </ul>	Contractor	Pre-construction / construction	N/A
CCI3	Plant and vehicle emissions	Onsite machinery and construction vehicles would be run efficiently to ensure optimal performance, minimal down time (idling) and high fuel efficiency.	Contractor	Construction	N/A
CCI4	Ancillary site selection	Consideration for which ancillary site to use for work at each intersection would include proximity to the construction site, so as to reduce emissions from vehicle travelling between the two locations.	Contractor	Pre-construction	N/A
CCI5	Climate change risk	Transport for NSW would complete a climate risk assessment as per the <i>Sustainable Design Guidelines</i> (Transport for NSW, 2017 b), which requires that projects with a capital cost exceeding \$15 million have a climate risk assessment. The assessment would identify and assess the risks that climate change poses to the proposal and allow them to be prioritised for identifying appropriate adaptation actions.	Transport for NSW	Pre-construction	N/A



No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
C1	Cumulative impacts	The proposal is to be managed in accordance with the safeguards identified in this REF.	Contractor	Pre-construction / construction	N/A
C2	Cumulative impacts	Transport for NSW would consult with Council and any nearby developers to decide how construction activities in one area can be minimised at any one time.	Transport for NSW	Pre-construction / construction	N/A

## Licensing and approvals

Section 138 of the *Roads Act 1993* requires consent from the relevant roads authority be obtained before any work can be carried out on a public road. This section applies to a roads authority such as Transport for NSW the same as any other person. Transport would also need to obtain a Road Occupancy Licence before construction starts as the proposal would impact of traffic flow.

No other environmental licences or approvals have been identified as required for the proposal.

## References

- Austrroads, 2015. *Guide to Road Design*.
- Department of Environment and Climate Change (DECC) [NSW], 2009. *Interim Construction Noise Guideline*.
- Department of Environment, Climate Change and Water, 2011. *NSW Road Noise Policy*
- Department of Environment and Climate Change (DECC), 2008. *Hygiene Protocol for the Control of Disease in Frogs*. Retrieved from [https://frogwatchsa.com.au/files/618\\_hyprfrog.pdf?v=982](https://frogwatchsa.com.au/files/618_hyprfrog.pdf?v=982)
- Department of Primary Industries (DPI), 2013. *Policy and guidelines for fish habitat conservation and management*.
- Department of Urban Affairs and Planning (DUAP) [NSW], 1996. *Roads and Related Facilities: EIS Guideline*.
- EPA, 2017. *Noise Policy for Industry*.
- Landcom, 2004. *Managing Urban Stormwater: Soils and Construction. Volume 1, 4th Edition*.
- NGH Pty Ltd (NGH), 2020. *Aboriginal Archaeological Survey (Stage 2 PACHCI): Olympic Highway Intersection Upgrades*.
- Office of Environment and Heritage (OEH) [NSW], 2011. *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales*.
- Roads and Maritime Services (RMS) [NSW], 2019. *Olympic Highway intersection upgrades through Wagga Wagga: Community consultation report*.
- RMS, 2019. *Supplements to the Australian standards*.
- RMS, 2018a. *Environmental Incident Classification and Reporting Procedure*.
- RMS, 2018b. *Landscape design guideline*.
- RMS, 2016a. *Environmental assessment procedure - Project review of environmental factors*
- RMS, 2016b. *Guideline for Biodiversity Offsets*.
- RMS, 2016c. *Noise wall design guideline: Design guideline to improve the appearance of noise walls in NSW*.
- RMS, 2016d. *Environmental assessment procedure: project review of environmental factors*
- RMS, 2016e. *Technical Guide: Management of road construction and maintenance wastes*.
- RMS, 2016f. *Construction Noise and Vibration Guideline*
- RMS, 2015a. *Heritage Procedure 2: Unexpected Heritage Items*.
- RMS, 2015b. *Noise Criteria Guideline*.
- RMS, 2015c. *Noise Mitigation Guideline*.
- RMS, 2015d. *Road design – supplement to Austrroads guides*.
- RMS, 2014a. *Environmental Procedure: Management of Wastes on Roads and Maritime Services Land*.
- RMS, 2014b. *Land acquisition information guide*.

- RMS, 2013. *Guideline for the Management of Contamination*.
- RMS, 2011. *Procedure for Aboriginal cultural heritage consultation and investigation*.
- Roads and Traffic Authority (RTA) [NSW], 2011a. *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects*.
- RTA, 2011b. *NSW Speed Zoning guidelines*.
- RTA, 2005. *Guidelines for the Management of Acid Sulfate Materials: Acid Sulfate Soils, Acid Sulfate Rock and Monosulfidic Black Ooze*.
- RTA, 2001. *Environmental Noise Management Manual*.
- RTA, 1999. *Code of Practice for Water Management*.
- Transport for NSW, 2021a. *Olympic Highway Upgrade – Review of Environmental Factors*.
- Transport for NSW, 2021b. *Draft Wagga Wagga Transport Plan*.
- Transport for NSW, 2021c. *Olympic Highway Intersection Improvement - Old Narrandera Road - 5.241km to 6.309km North of Wagga – Road Design – Concept Design*.
- Transport for NSW, 2021d. *Olympic Highway Intersection Improvement – Travers Street - 3.455km to 3.970km North of Wagga Wagga – Road Design – Concept Design*.
- Transport for NSW, 2020a. *Olympic Highway intersection upgrades - Preferred options report*
- Transport for NSW, 2020b. *Olympic Highway intersection upgrades – Re-examination of preferred options: Frequently asked questions (FAQ)*
- Transport for NSW, 2020c. *QA Specification G40 Clearing and Grubbing*.
- Transport for NSW, 2020d. *Traffic control at work sites: Technical Manual*. Issue 6.0.
- Transport for NSW, 2020e. *Specification PS271 Hydrology and Drainage Design*.
- Transport for NSW, 2017. *Carbon Estimate and Reporting Tool Manual*. Version 2.0.
- Transport for NSW, 2014. *QA Specification G38 Soil and Water Management*.
- Transport for NSW, 2013. *QA Specification G36 Environmental Protection*.
- Transport for NSW, 2010. *QA Specification G10 Traffic Management*.
- Transport for NSW, n.d. *Transport Environment and Sustainability Policy*.
- Umwelt, 2022a. *Artificial Shelter Management Strategy*.
- Umwelt, 2022b. *Environmental Assessments for Ancillary Sites*.
- Umwelt, 2022c. *Flora and Fauna Management Plan*.
- Umwelt, 2022d. *Noise and Vibration Impact Assessment – Gardiner Street Addendum*.
- Umwelt, 2022e. *Justification Report for No Stormwater Detention Basin*.
- Umwelt, 2022f. *Risk Assessment for No Spill Basin*.
- Umwelt, 2022g. *Soil and Water Quality Management Plan*.

Umwelt, 2021. *Olympic Highway Intersections Upgrade - Biodiversity Assessment Report*

Wagga Wagga City Council, 2021a. *Wagga Wagga Special Activation Precinct Master Plan*. Accessed June 2022.  
[Wagga Wagga Master Plan \(shared-drupal-s3fs.s3-ap-southeast-2.amazonaws.com\)](https://shared-drupal-s3fs.s3-ap-southeast-2.amazonaws.com/Wagga%20Wagga%20Master%20Plan)

Wagga Wagga City Council, 2021b. *Pine Gully Road Upgrade*. Accessed June 2022.  
<https://wagga.nsw.gov.au/projects/pine-gully-road-upgrade>

Wagga Wagga City Council, 2021c. *Wagga Wagga Active Travel Plan*. Accessed June 2022.  
<https://wagga.nsw.gov.au/projects/cycling-network>

Wagga Wagga City Council, 2020. *Biodiversity Strategy: Maldhangilanha 2020-2030*.

Wagga Wagga City Council, 2017a. *Flood Prone Land Map*.

Wagga Wagga City Council, 2017b. *Wagga Wagga Integrated Transport Strategy and Implementation Plan 2040*.

Wagga Wagga City Council, 2017c. *Engineering Guidelines for Subdivisions and Development Standards*.  
<https://wagga.nsw.gov.au/building-and-development/planning-and-development-services/engineering-guidelines-for-subdivisions>.

Wagga Wagga City Council, 2013. *Wagga Wagga Spatial Plan 2013-2043*

Waters Consultancy Pty Ltd, 2022. *Aboriginal Cultural Values Assessment Report*

## APPENDIX 1 - SUBMISSIONS

Respondent	Submission No.	Section where issues are addressed
Individual	1	<p>Proposal design - Grade separation works</p> <p>Proposal design - Upgrades to the Pearson Street / Sturt Highway intersection</p> <p>Traffic and transport - Heavy vehicles using Olympic Highway</p> <p>Traffic and transport - Traffic at the Pearson Street / Sturt Highway intersection</p>
Individual	2	N/A
Individual	3	<p>Proposal design - Expansion of Gobbagombalin Bridge</p> <p>Proposal design - Grade separation works</p> <p>Traffic and transport - Trial using temporary traffic lights</p> <p>Consultation - Addressing community concerns</p>
Individual	4	Proposal design - Travers Street intersection design
Individual	5	<p>Proposal design - Travers Street intersection design</p> <p>Consultation - REF display</p>
Individual	6	Traffic and transport - Trial using temporary traffic lights
Wagga Wagga Police (Highway Patrol)	7	<p>Traffic and transport - Traffic lights are ineffective</p> <p>Socio-economic and liveability: access and connectivity - Emergency vehicle access</p>
Local bus service	8	<p>Socio-economic and liveability: access and connectivity - Access to bus routes</p> <p>Socio-economic and liveability: community safety - School drop off areas</p>
Individual	9	Traffic and transport - Left-in, left-out arrangement at Moorong Street

Respondent	Submission No.	Section where issues are addressed
Individual	10	<p>Proposal design - Travers Street intersection design</p> <p>Proposal design - Old Narrandera Road intersection design</p> <p>Traffic and transport - Traffic monitoring</p> <p>Socio-economic and liveability: access and connectivity - Moorong Street access</p> <p>Socio-economic and liveability: community safety - Traffic signals</p>
Local business	11	<p>Socio-economic and liveability: access and connectivity - Moorong Street access</p> <p>Socio-economic and liveability: business and industry - Impact to local businesses</p>
Individual	12	<p>Traffic and transport - Traffic lights are ineffective</p> <p>Socio-economic and liveability: access and connectivity - Emergency vehicle access</p>
Individual	13	<p>Proposal design - Roundabouts at both intersections</p>
Local business	14	<p>Proposal design - Changes to Moorong Street access</p> <p>Socio-economic and liveability: access and connectivity - Moorong Street access</p> <p>Socio-economic and liveability: business and industry - Impact to local businesses</p>
Individual	15	<p>Proposal design - Expansion of Gobbagombalin Bridge</p> <p>Traffic and transport - Traffic lights are ineffective</p> <p>Traffic and transport - Heavy vehicles using Olympic Highway</p>
Individual	16	<p>Proposal design - Grade separation works</p> <p>Traffic and transport - Traffic lights are ineffective</p> <p>Traffic and transport - Increased traffic due to residential growth</p> <p>Future plans for Wagga Wagga - Wagga Wagga City Council plans</p>



Respondent	Submission No.	Section where issues are addressed
Individual	17	<p>Aboriginal cultural heritage - Cultural significance of the proposal area</p> <p>Aboriginal cultural heritage - Consultation</p> <p>Aboriginal cultural heritage - Site surveys</p> <p>Aboriginal cultural heritage - Site inductions and toolbox talks</p> <p>Aboriginal cultural heritage - Incorporating Aboriginal culture into the proposal</p> <p>Biodiversity - Rehabilitation works</p>
Wagga Wagga City Council	18	<p>Proposal design - Expansion of Gobbagombalin Bridge</p> <p>Proposal design - Grade separation works</p> <p>Traffic and transport - Traffic at the Pearson Street / Sturt Highway intersection</p> <p>Traffic and transport – Traffic modelling</p> <p>Socio-economic and liveability: community safety - Horses crossing Travers Street</p> <p>Consultation - REF display</p> <p>Consultation - Consultation with Council</p>
Individual	19	<p>Proposal design - Expansion of Gobbagombalin Bridge</p> <p>Traffic and transport - Traffic lights are ineffective</p> <p>Traffic and transport - Increased traffic due to residential growth</p>
Individual	20	Traffic and transport - Traffic lights are ineffective
Individual	21	Socio-economic and liveability: community safety - Traffic accidents
Individual	22	Proposal design - Expansion of Gobbagombalin Bridge
Individual	23	<p>Proposal design - Expansion of Gobbagombalin Bridge</p> <p>Socio-economic and liveability: access and connectivity - Emergency vehicle access</p>

Respondent	Submission No.	Section where issues are addressed
Individual	24	Proposal design - Expansion of Gobbagombalin Bridge
Individual	25	Socio-economic and liveability: access and connectivity - Pedestrian and cyclist access
Individual	26	Proposal design - Expansion of Gobbagombalin Bridge Traffic and transport - Merging on Olympic Highway
Individual	27	Proposal design - Changes to the horse pathway Socio-economic and liveability: access and connectivity - Moorong Street access Socio-economic and liveability: business and industry - Impact to local businesses
Individual	28	N/A
Individual	29	Proposal design - Grade separation works Proposal design - Travers Street intersection design
Individual	30	Proposal design - Expansion of Gobbagombalin Bridge Traffic and transport - Traffic lights are ineffective
Individual	31	Traffic and transport - Traffic lights are ineffective
Individual	32	Proposal design - Expansion of Gobbagombalin Bridge Proposal design - Changes to existing roads Traffic and transport - Traffic lights are ineffective Traffic and transport - Increased traffic due to residential growth
Individual	33	Proposal design - Grade separation works Proposal design - Travers Street intersection design Traffic and transport - Traffic lights are ineffective

Respondent	Submission No.	Section where issues are addressed
Individual	34	Proposal design - Expansion of Gobbagombalin Bridge
Individual	35	Proposal design - Roundabouts at both intersections
Individual	36	Traffic and transport - Traffic lights are ineffective
Individual	37	Consultation - REF display
Individual	38	Proposal design - Expansion of Gobbagombalin Bridge
Individual	39	Proposal design - Expansion of Gobbagombalin Bridge Socio-economic and liveability: access and connectivity - Emergency vehicle access
Individual	40	Traffic and transport - Traffic lights are ineffective
Individual	41	Proposal design - Grade separation works
Individual	42	Proposal design - Roundabouts at both intersections
Individual	43	Proposal design - Roundabouts at both intersections
Individual	44	Proposal design - Grade separation works Traffic and transport - Traffic lights are ineffective
Individual	45	N/A
Individual	46	Proposal design - Expansion of Gobbagombalin Bridge
Individual	47	N/A
Individual	48	Traffic and transport - Increased traffic due to residential growth Construction activities - Planned construction schedule

Respondent	Submission No.	Section where issues are addressed
Individual	49	Traffic and transport - Traffic lights are ineffective
Individual	50	Proposal design - Expansion of Gobbagombalin Bridge
Individual	51	Proposal design - Roundabouts at both intersections
Individual	52	Proposal design - Old Narrandera Road intersection design Proposal design - Changes to Moorong Street access Proposal design - Changes to the horse pathway Proposal design - Upgrades to the Pearson Street / Sturt Highway intersection
Individual	53	N/A
Individual	54	Proposal design - Roundabouts at both intersections
Individual	55	Proposal design - Expansion of Gobbagombalin Bridge Traffic and transport - Merging on Olympic Highway
Individual	56	Socio-economic and liveability: community safety - Traffic cameras Socio-economic and liveability: community safety - Road speed limits
Individual	57	Proposal design - Travers Street intersection design Socio-economic and liveability: community safety - Traffic cameras
Individual	58	Proposal design - Expansion of Gobbagombalin Bridge Proposal design - Changes to existing roads
Individual	59	Proposal design - Travers Street intersection design

Respondent	Submission No.	Section where issues are addressed
Individual	60	Proposal design - Travers Street intersection design
Individual	61	N/A
Individual	62	Traffic and transport - Left-in, left-out arrangement at Moorong Street Socio-economic and liveability: access and connectivity - Moorong Street access Socio-economic and liveability: community safety - Heavy vehicles using Kincaid Street Noise and vibration - Heavy vehicles in residential areas
Individual	63	Socio-economic and liveability: access and connectivity - Access for horses Socio-economic and liveability: access and connectivity - Moorong Street access Socio-economic and liveability: access and connectivity - Pedestrian and cyclist access
Individual	64	Proposal design - Expansion of Gobbagombalin Bridge Traffic and transport - Increased traffic due to residential growth
Individual	65	Proposal design - Travers Street intersection design
Individual	66	Proposal design - Roundabouts at both intersections Traffic and transport - Traffic lights are ineffective
Individual	67	Proposal design - Expansion of Gobbagombalin Bridge Proposal design - Travers Street intersection design Proposal design - Old Narrandera Road intersection design Traffic and transport - Traffic capacity at Gobbagombalin Bridge

Respondent	Submission No.	Section where issues are addressed
		Traffic and transport - Traffic modelling
Individual	68	Proposal design - Grade separation works
Individual	69	Proposal design - Grade separation works
Individual	70	Proposal design - Roundabouts at both intersections Traffic and transport - Traffic lights are ineffective Consultation - Addressing community concerns
Individual	71	Noise and vibration - Noise controls
Local association group	72	Traffic and transport - Increased traffic due to residential growth Traffic and transport - Left-in, left-out arrangement at Moorong Street Socio-economic and liveability: business and industry - Impact to local businesses
Individual	73	Proposal design - Travers Street intersection design Traffic and transport - Increased traffic due to residential growth Traffic and transport - Traffic modelling Traffic and transport - Flood events
Individual	74	Proposal design - Roundabouts at both intersections
Individual	75	Traffic and transport - Traffic lights are ineffective
Individual	76	Proposal design - Roundabouts at both intersections Socio-economic and liveability: community safety - Traffic accidents
Individual	77	Socio-economic and liveability: access and connectivity - Pedestrian and cyclist access

Respondent	Submission No.	Section where issues are addressed
Independent Member for Wagga Wagga on behalf of individual	78	Traffic and transport - Trial using temporary traffic lights  Socio-economic and liveability: community safety - Street lighting
Independent Member for Wagga Wagga on behalf of local business	79	Proposal design - Changes to Moorong Street access  Socio-economic and liveability: business and industry - Impact to local businesses



## APPENDIX 2 - ABORIGINAL CULTURAL HERITAGE REPORT