Tumut intersection upgrade

Submissions report

Transport for NSW | November 2021

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Prepared by NGH Pty Ltd and Transport for NSW

SF2020/182073

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Document controls

Approval and authorisation

Title	Tumut intersection upgrade
Accepted on behalf of Transport for NSW by:	Russell Farnell
Signed:	
Dated:	8th December 2021

Document status

Document status	Date	Prepared by	Reviewed by
Draft 1.0	02/11/2021	Lewis Tinley	Fiona McKay
Final 1.0	16/11/2021	Ainslee Roser	Zeina Jokadar

Executive summary

The proposal

Transport for NSW (Transport) proposes to upgrade the intersection of Gocup Road and the Snowy Mountains Highway (the proposal). The intersection is located within the Snowy Valleys Council Local Government Area (LGA) and is about three kilometres north west from the township centre of Tumut, NSW (refer Figure 1-1).

The proposal aims to significantly increase the safety of this intersection through the installation of a roundabout and key features including:

- Rehabilitating approach span gradient to improve vehicle sight distance
- Widening road shoulder and lane widths where needed
- Clearing and trimming of vegetation including mature trees
- Relocating of a section of overhead powerlines, with a second section to be moved underground
- Extending of existing drainage structure
- Relocating the Wetlands Walking trail
- Enhancing the visibility of signposting and line marking
- Upgrading the protection and visible permeability of guardrail on approach spans
- Improving pedestrian and cyclist accessibility around the intersection.

Construction is expected to commence early 2022 and will take about 12 months to complete, weather permitting.

Display of the Review of Environmental Factors

Transport prepared a Review of Environmental Factors (REF) for the proposed Tumut intersection upgrade project. The REF was publicly displayed between 27 September 2021 and 17 October 2021 on the Transport website, Snowy Valleys Council office, local newspaper and radio stations, and a link to the project website was shared on Facebook and via a media release. The REF was also made available for download on the project website. During the consultation period, Transport invited the public to provide feedback on the proposal.

Summary of issues and responses

The public display of the REF and supporting consultation resulted in a total of eight submissions, of which all were from the general community.

Of these submissions, one (12.5%) was strongly in support of the proposal, three (37.5%) were partially supportive of the proposal, and three (37.5%) supported safety upgrades, however objected to a roundabout (suggesting alternative options). The remaining one (12.5%) submission offered no position on whether they supported or objected to the proposal, instead suggesting modifications or requesting further information.

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

Traffic Lights

Issue: Submissions 2 and 8 suggest traffic lights would be a safer alternative to a roundabout for vehicles.

Response: An investigation of options by Transport for NSW in 2019, followed by a review in 2020 by the Centre for Road Safety, assessed roundabout and traffic light safety options for the proposal (as discussed in the REF Section 2.4: Alternatives and options considered). This study found that a four-way intersection resulted in 24 potential collision points (where vehicle turning paths overlap) and would not reduce impact speeds, impact angles or adequately address community concerns about safety at the intersection. The safety review recommended a roundabout as the preferred option as it was rated the highest in safety performance of all options considered and best addressed the community's safety concerns. No changes to the design are proposed.

Heavy Vehicle Accessibility

Issue: Submissions 1, 4, 6, and 8 suggest the roundabout would not adequately provide room, approach angles or turning circles to cater for long and heavy vehicles.

Response: The design of the roundabout has considered heavy vehicles (including turning paths for long vehicles) by providing additional pavement area for wider vehicles turning left into Gocup Road (as discussed in the REF Section 6.3: Traffic and transport). The white line indicated in the detailed design is line marking, not kerbing (and is traversable on the North-west corner). The size of the new roundabout is 50-metres in diameter, that is twice the size of the existing pavement which is approximately 25-metres in width. The roundabout would accommodate:

- 36.5m Type 1 Road Trains (this includes all PBS 3A vehicles)
- 26m B-Double
- 19m Semi Trailers
- 30m Oversize and Overmass heavy vehicles.

In addition, studies have shown roundabouts are safer than traffic lights, improve traffic flow and are more efficient for heavy vehicles (Transport for NSW, 2020). No changes to the design are proposed.

Bypass/Reroute Intersection

Issue: Submissions 4, 6, 7, and 8 suggest various alternatives to a roundabout intersection upgrade, including a T intersection, rerouting to Dalhunty Street, moving works to Tumut Saleyard, or creating a heavy vehicle detour.

Response: These options were considered in the design of the proposal and in the proposal's safety assessment from the Centre for Road Safety (as discussed in the REF Section 2.4: Alternatives and options considered). This assessment found T-intersections are more dangerous than roundabouts. Moving the intersection and closing the existing Gocup Road connection would create new safety issues and collision points at each of the new intersection locations. An alternate intersection location is also expected to take longer to build requiring property acquisition, complex environmental requirements, and possible changes to the highway. No changes to the design are proposed.

Roundabout Design

Issue: Submissions 3, 5, and 6 suggest that the approach angles, gradient/elevation and visibility need to be further considered in the design.

Response: The REF Section 2.3: Proposal objectives and development criteria, outlines the development criteria that was considered in developing the design, which included consideration of these issues. The design includes reducing approach angles, leveling approach and clearing of vegetation to improve sight visibility and traffic safety. No changes to the design are proposed.

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 prior to and during the construction phase.

Contents

Tables

1. Introduction and background

1.1 The proposal

Transport for NSW (Transport) proposes to upgrade the intersection of Gocup Road and the Snowy Mountains Highway in order to address significant road safety issues (the proposal). The proposal aims to significantly improve the safety of this intersection through the installation of a roundabout and key features including:

- Rehabilitating approach span gradient to improve vehicle sight distance
- Widening road shoulder and lane widths where needed
- Clearing and trimming of vegetation including mature trees
- Relocating of a section of overhead powerlines, with a second section to be moved underground
- Extending of existing drainage structure
- Relocating the Wetlands Walking trail
- Enhancing the visibility of signposting and line marking
- Upgrading the protection and visible permeability of guardrail on approach spans
- Improving pedestrian and cyclist accessibility around the intersection.

For a regional context of the proposal see Figure 1-1. For an overview of the proposal and its key features see Figure 1-2.

A more detailed description of the proposal is found in Section 1.1 (proposal identification) of the Tumut intersection upgrade Review of Environmental Factors prepared by Transport for NSW (TfNSW, 2021).

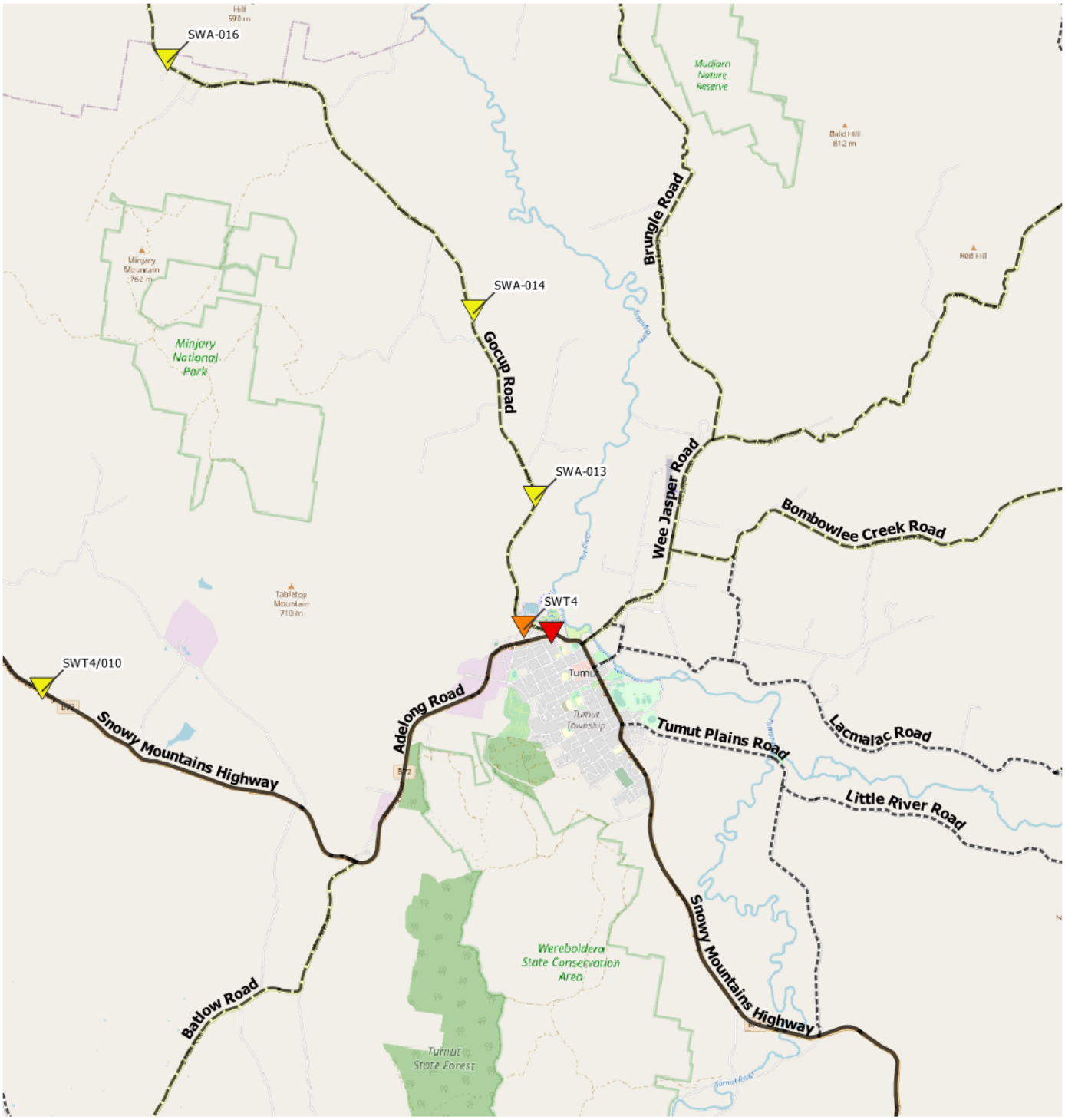

Figure 1-1 Location of the proposal

Figure 1-2 The proposal

1.2 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 21 days between 27 November 2021 and 17 October 2021 at the Snowy Valleys Council office, as detailed in Table 1-1. The REF was placed on Transport's project website and made available for download. The display locations and website link were advertised in local newspaper/radio, on Facebook, and via media release.

Table 1-1: Display locations

Location	Address
Tumut Council Office	76 Capper St, Tumut NSW 2720

1.3 Purpose of the report

This submissions report relates to the REF prepared for the Tumut intersection upgrade project 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 (Chapter 2) and any modifications or changes to the proposal and any additional environmental management measures as a result of further design development or in response to submissions.

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

2. Response to issues

Transport received eight submissions, accepted up until midnight on Sunday, 17 October 2021. Table 2-1 lists the respondents and each respondent's allocated submission number. The table also indicates where the issues from each submission have been addressed in Chapter 3 of this report.

Table 2-1: Respondents

Respondent	Submission No.	Section number where issues are addressed
Individual	1	Section 2.3
Individual	2	Section 2.2
Individual	3	Section 2.5
Individual	4	Section 2.3, and Section 2.4
Individual	5	Section 2.5
Individual	6	Section 2.3, Section 2.4, and Section 2.5
Individual	7	Section 2.4
Individual	8	Section 2.2, Section 2.3, and Section 2.4

2.1 Overview of issues raised

A total of eight submissions were received in response to the display of the Review of Environmental Factors. All eight submissions were from individuals in the community (i.e. no government agency submissions).

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

Of these submissions, one (12.5%) was strongly in support of the proposal, three (37.5%) were partially supportive of the proposal, and three (37.5%) supported safety upgrades, however, objected to a roundabout (suggesting alternative options). The remaining one (12.5%) submission offered no position on whether they supported or objected to the proposal, instead suggesting modifications or requesting further information.

The main issues raised by the public can be seen in four categories:

- Traffic Lights (Section 2.2)
- Heavy Vehicle Use (Section 2.3)
- Bypass/Reroute Intersection (Section 2.4)
- Roundabout Design (Section 2.5).

The majority of the comments related to alternative approaches and suggestions for the design of the proposal and others related to concerns about the roundabouts capacity to cater for heavy vehicles, traffic and road safety.

These issues are described in more detail in Sections 2.2, 2.3, 2.4 and 2.5.

2.2 Issue 1: Traffic Lights

Submission number(s)

Submissions 2 and 8.

Issue description

- Suggests traffic lights would be a safer alternative to a roundabout for vehicles.

Response

Transport investigated the option to install traffic lights at the Snowy Mountains Highway and Gocup Road intersection in 2019 but traffic lights were not considered a suitable treatment at this location.

A subsequent review in 2020 by the Centre for Road Safety (as discussed in the REF Section 2.4: Alternatives and options considered) found that traffic lights resulted in 24 potential collision points (where vehicle turning paths overlap). It also found traffic lights would not reduce conflict points, impact speeds or impact angles, and would not address the immediate community concerns about safety at the intersection when compared to a roundabout (Transport for NSW, 2020). The safety review recommended a roundabout as the preferred option as it was rated the highest in safety performance of all options considered and best addressed the community's safety concerns. Therefore, a roundabout has been chosen as the preferred option. No changes to the design are proposed.

2.3 Issue 2: Heavy Vehicle Use

Submission number(s)

Submissions 1, 4, 6, and 8.

Issue description

- Suggests the roundabout would not adequately provide room, approach angles or turning circles to cater for long and heavy vehicles.

Response

Heavy vehicles have been a key consideration during the development of this project due to the high degree of freight using the intersection daily, and the intersection's key links to local timber and agricultural industries. The turning paths for larger vehicles (including B-doubles and Type 1 Road Trains) have been included in the design of the new roundabout.

These vehicles would be able to traverse the roundabout comfortably. Additional pavement area has also been provided for wider vehicles turning left into Gocup Road. The white line indicated in the detailed design is line marking, not kerbing (and is traversable on the North-west corner).

The size of the new roundabout is 50-metres in diameter, that is twice the size of the existing pavement which is approximately 25-metres in width.

The roundabout would accommodate:

- 36.5m Type 1 Road Trains (this includes all PBS 3A vehicles)
- 26m B-Double
- 19m Semi Trailers
- 30m Oversize and Overmass heavy vehicles.

As per the REF Section 2.4.3: Analysis of options, studies have shown roundabouts are safer than traffic lights, improve traffic flow and are more efficient for heavy vehicles (Transport for NSW, 2020). In pursuit of a reduction in accidents and fatalities, roundabouts improve intersection safety by:

- Reducing vehicle speeds, making it easier to choose a safe gap in traffic
- Minimising the impact angles of approach, leading to lower severity crashes
- Having significantly fewer conflict points
- Directing motorists in one direction
- Reducing the risk of being seriously injured by up to 85 per cent.

No changes to the design are proposed.

2.4 Issue 3: Bypass/Reroute Intersection

Submission number(s)

Submissions 4, 6, 7, and 8.

Issue description

- Suggests closing Gocup Road and replacing it with a T-intersection would be safer
- Suggests a safer alternative would be Option 5 to close Gocup Road and move the intersection (as seen in the REF Section 2.4: Alternatives and options considered)
- Suggests rerouting Gocup Road to join the Snowy Highway at Dalhunty Street may provide better visibility and angles for truck safety
- Suggests an alternative exit near the existing Tumut Saleyard or suggests the roundabout be moved to a location near the saleyards would be safer
- Suggests a heavy vehicle detour near the old RTA works depot through crown reserve and re-entering just West of the Saleyards would be safer.

Response

According to the Centre for Road Safety (as summarised in the REF Section 2.4: Alternatives and options considered), roundabouts are preferred over a T-junction intersection, as roundabouts have only four (4) potential conflict points and provide simplified decision-making requiring drivers to slow or stop to give way to any vehicle already in the roundabout. This is in contrast to a T-junction which has six (6) conflict points and requires drivers to consider and self-manage the interactions from oncoming vehicles approaching from either direction (Transport for NSW, 2020).

When considering the option to move the intersection of Gocup Road and Snowy Mountains Highway (SMH), a number of safety issues would be introduced which would affect the overall route, including:

- A closure of Gocup Road at the current location would result in Capper St/SMH intersection becoming a 6 conflict point, uncontrolled T junction
- The need to construct a new service road off the current Gocup Road alignment to facilitate access for all vehicles, including heavy vehicles accessing both the Transport and Council depots. This new intersection would be an uncontrolled T-intersection with 6 conflict points
- Additionally, to leave the existing intersection untreated for the expected extended period required to construct a new, realigned intersection would unreasonably expose the community to further potential crashes until the completion of those works.

The suggestion of an alternative exit, near the existing Tumut saleyards has been considered by the Centre for Road Safety during their review in May 2020 to improve safety at this location (Transport for NSW, 2020), however, moving the intersection and closing the existing Gocup Road connection would create new safety issues and collision points at each of the new intersection locations. A new intersection in addition to a T-intersection treatment on the current intersection would increase the number of collision points with a reduced safety outcome compared to the proposed roundabout at the Snowy Mountains Highway and Gocup Road intersection.

The suggestion of providing a roundabout at a location near the Saleyards has also been considered during the Centre for Road Safety review. As safety is the key driver for this project, a roundabout at the current location is preferred as it had the highest safety performance of all options. An alternate intersection location is also expected to take longer to build with property acquisition, complex environmental requirements, and possible changes to the highway.

The suggestion of providing a heavy vehicle bypass has been previously considered by the Centre for Road Safety during their review in May 2020 to improve safety at this location, however, moving the intersection would create new safety issues and collision points at each of the new intersection locations. As safety is the key driver for this project, a roundabout at the current location is preferred as it had the highest safety performance of all options considered during the Centre for Road Safety's review. An alternate intersection location is also expected to take longer to build with property acquisition, complex environmental requirements, and possible changes to the highway.

No changes to the design are proposed.

2.5 Issue 4: Roundabout Design

Submission number(s)

Submissions 3, 5 and 6.

Issue description

- Approach angles and approach gradient/elevation need to be considered
- Approach visibility needs to be improved by removing trees.

Response

Transport for NSW is aware of gradients and sight distance issues at the intersection and as part of the detailed design for the new roundabout, the elevation level and alignment on the approach legs to the roundabout have been significantly improved. This has greatly improved sight distances for the intersection and overall safety.

For further explanation, please note the following sections in the REF:

- Section 3.2.3 Major design features: “large roundabout with major fill component to northeast and some to southeast”
- Section 3.3.5 Earthworks: “Table 3-3 Anticipated cut and fill quantities Cut ~3,940 m^3 Fill ~15,000m^3”

The proposal includes removal of vegetation along Gocup Road and the Snowy Mountains Highway as well as some trees at the intersection near the Butter Factory to further improve sight visibility, as outlined in multiple Sections of the REF, including Section 6.1: Biodiversity, and Section 6.6: Visual impacts.

No changes to the design are proposed.

3. Environmental management

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

After consideration of the issues raised in the public submissions, no changes are proposed to the proposal, and it has been determined that no additional safeguard and management measures are required.

Should the proposal proceed, environmental management will be guided by the framework and measures outlined within Chapter 6 of the REF.

3.1 Environmental management plans (or system)

A number of safeguards and management measures have been identified in order to minimise adverse environmental impacts, including social impacts, which could potentially arise as a result of the proposal. Should the proposal proceed, these management measures would be incorporated into the detailed design and applied during the construction and operation of the proposal.

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

The PEMP and CEMP will be prepared prior to construction of the proposal and must be reviewed and certified by environment staff from the Regional and Outer Metropolitan region, prior to the commencement of any on-site works. The CEMP will be a working document, subject to ongoing change and updated as necessary to respond to specific requirements. The PEMP and CEMP would be developed in accordance with the specifications set out in the: QA Specification G36 – Environmental Protection (Management System), QA Specification G38 – Soil and Water Management (Soil and Water Plan), QA Specification G40 – Clearing and Grubbing and QA Specification G10 – Traffic Management].

3.2 Summary of safeguards and management measures

The REF for the Tumut intersection 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 Chapter 6 of the REF) do not need to be revised. Should the proposal proceed, the environmental management measures in Table 3-1 will guide the subsequent phases of the proposal.

Table 3-1: Summary of environmental safeguards and management measures

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
GEN1	General - minimise environmental impacts during construction	A CEMP will be prepared and submitted for review and endorsement of the Transport for NSW Environment Manager prior to commencement of the activity. As a minimum, the CEMP will address the following: • any requirements associated with statutory approvals • details of how the project will implement the identified safeguards outlined in the REF • issue-specific environmental management plans • roles and responsibilities • communication requirements • induction and training requirements • procedures for monitoring and evaluating environmental performance, and for corrective action • reporting requirements and record-keeping • procedures for emergency and incident management • procedures for audit and review. The endorsed CEMP will be implemented during the undertaking of the activity.	Contractor / Transport for NSW project manager	Pre-construction / detailed design	
GEN2	General - notification	All businesses, residential properties and other key stakeholders (eg schools, local councils) affected by the activity will be notified at least five days prior to commencement of the activity.	Contractor / Transport for NSW project manager	Pre-construction	
GEN3	General – environmental awareness	All personnel working on site will receive training to ensure awareness of environment protection requirements to be implemented during the project. This will include up-front site induction and regular "toolbox" style briefings.	Contractor / Transport for NSW project manager	Pre-construction / detailed design	

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		Site-specific training will be provided to personnel engaged in activities or areas of higher risk. These include: • areas of Aboriginal heritage sensitivity • threatened species habitat • adjoining residential areas requiring particular noise management measures.			
Biodiversity	Removal of native vegetation	• native vegetation removal will be minimised through detailed design • vegetation removal will be undertaken in accordance with *Guide 4: Clearing of vegetation and removal of bushrock* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011) • native vegetation will be re-established in accordance with *Guide 3: Re-establishment of native vegetation* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011) the unexpected species find procedure is to be followed under *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011) if threatened ecological communities, not assessed in the biodiversity assessment, are identified in the proposal area.	Contractor	Detailed design / construction/post construction	Additional safeguard
Biodiversity	Removal of threatened species habitat and habitat features	• habitat removal will be minimised through detailed design • habitat removal will be undertaken in accordance with *Guide 4: Clearing of vegetation and removal of bushrock* of the *Biodiversity Guidelines: Protecting*	Contactor	Detailed design construction	Additional safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		and managing biodiversity on RTA projects (RTA 2011) • habitat will be replaced or re-instated in accordance with *Guide 5: Re-use of woody debris and bushrock* and *Guide 8: Nest boxes* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011) the unexpected species find procedure is to be followed under *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011) if threatened fauna, not assessed in the biodiversity assessment, are identified in the proposal area.			
Biodiversity	Aquatic impacts	Aquatic habitat will be protected in accordance with Guide 10: Aquatic habitats and riparian zones of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA 2011) and Section 3.3.2 Standard precautions and mitigation measures of the Policy and guidelines for fish habitat conservation and management Update 2013 (DPI (Fisheries NSW) 2013).	Contractor	Construction	Additional safeguard
Biodiversity	Groundwater dependent ecosystems	Interruptions to water flows associated with groundwater dependent ecosystems will be minimised through detailed design.	Contractor	Detailed design	Additional safeguard
Biodiversity	Changes to hydrology	Changes to existing surface water flows will be minimised through detailed design.	Contractor	Detailed design	Additional safeguard
Biodiversity	Edge effects on adjacent native vegetation and habitat	Exclusion zones will be set up at the limit of clearing in accordance with *Guide 2: Exclusion zones* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011).	Contractor	Construction	Additional safeguard
Biodiversity	Injury and mortality of fauna	Fauna will be managed in accordance with *Guide 9: Fauna handling* of the *Biodiversity Guidelines:*	Contractor	Construction	Additional safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		Protecting and managing biodiversity on RTA projects (RTA 2011).			
Biodiversity	Invasion and spread of weeds	Weed species will be managed in accordance with *Guide 6: Weed management* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011).	Contractor	Construction	Additional safeguard
Biodiversity	Invasion and spread of pests	Pest species will be managed within the proposal area.	Contractor	Construction	Additional safeguard
Biodiversity	Invasion and spread of pathogens and disease	Pathogens will be managed in accordance with *Guide 2: Exclusion zones* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011).	Contractor	Construction	Additional safeguard
Biodiversity	Noise light and vibration	Shading and artificial light impacts will be minimised through detailed design.	Contractor	Detailed design	Additional safeguard
Soils and Water	Soil and Water	A Soil and Water Management Plan (SWMP) will be implemented as part of the CEMP. The SWMP will identify all reasonably foreseeable risks relating to soil erosion and water pollution and describe how these risks will be addressed during construction. The Soil and Water Management Plan (SWMP) will be reviewed by a soil conservationist on the Roads and Maritime list of Registered Contractors for Erosion, Sedimentation and Soil Conservation Consultancy Services. The SWMP will then be revised to address the outcomes of the review.	Contractor	Pre-construction	Core standard safeguard Section 2.1 of QA G38 *Soil and Water Management*
Soils and Water	Erosion and sediment impacts	A site specific Erosion and Sediment Control Plan (ESCP) will be prepared and implemented as part of the Soil and Water Management Plan (SWMP). The Plan will include arrangements for managing wet weather events, including monitoring of potential high	Contractor	Detailed design/ Pre-construction	Additional safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		risk events (such as storms) and specific controls and follow-up measures to be applied in the event of wet weather.			
Soils and Water	Erosion and sediment impacts	Consistent with any specific requirements of the approved SWMP and ESCP, control measures will be implemented to minimise risks associated with erosion and sedimentation and entry of materials to drainage lines and waterways. That will include, but not necessarily be limited to: • early set up and implementation of sediment management devices, such as fencing, hay bales, sand bags, catch drains and outlet protection structures • measures to divert or capture and filter water prior to discharge, such as drainage channels and first flush • scour protection and energy dissipaters at locations of high erosion risk • installation of measures at work entry and exit points to minimise movement of material onto adjoining roads, such as rumble grids and regular road sweeping • appropriate location and storage of construction materials, fuels and chemicals, including bunding where appropriate • pre-construction and construction water quality monitoring and testing upstream and downstream of the work site (to ensure no dirty water leaves site).	Contractor	Pre-construction/ construction	Additional safeguard
Soils and Water	Soil and water	Establish clearing limits and work boundaries that are well defined using barrier tape (or equivalent) prior to construction, clearing or stripping works commencing.	Contractor	Construction	Additional safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
Soils and Water	Erosion and sediment impacts	Erosion and sedimentation controls are to be checked and maintained on a regular basis (including clearing of sediment from behind barriers) and records kept and provided on request.	Contractor	Construction	Additional safeguard
Soils and Water	Erosion and sediment impacts	Work areas are to be stabilised progressively during the works.	Contractor	Construction	Additional safeguard
Soils and Water	Erosion and sediment impacts	Erosion and sediment control measures are not to be removed until the works are complete and areas are stabilised.	Contractor	Construction	Additional safeguard
Soils and Water	Erosion and sediment impacts	The maintenance of established stockpile sites to be in accordance with the Roads and Maritime Services *Stockpile Site Management Guidelines* (EMS-TG-10).	Contractor	Construction	Additional safeguard
Soils and Water	Contaminated land	Where excavation in existing fill material will be required, testing for waste classification and the presence of asbestos will be undertaken prior to disposal or reuse, in accordance with TfNSW waste guidelines.	Contractor	Construction	Additional safeguard
Soils and Water	Contaminated land	If contaminated areas are encountered during construction, appropriate control measures will be implemented to manage the immediate risks of contamination. All other work that may impact on the contaminated area will cease until the nature and extent of the contamination has been confirmed and any necessary site-specific controls or further actions identified in consultation with the Transport Environment Manager and/or EPA.	Contractor	Detailed design/Pre-construction	Additional safeguard
Soils and Water	Accidental spill	A site specific emergency spill plan will be developed, and include spill management measures in accordance with the Transport for NSW *Code of Practice for Water Management* (RTA, 1999) and relevant EPA guidelines. The plan will address measures to be	Contractor	Detailed design/Pre-construction	Additional safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		implemented in the event of a spill, including initial response and containment, notification of emergency services and relevant authorities (including Transport and EPA officers).			
Soils and Water	Water quality	There is to be no release of dirty water into drainage lines and/or waterways.	Contractor	Construction	Additional safeguard
Soils and Water	Water quality	Water quality control measures are to be used to prevent any materials (e.g. concrete, grout, sediment etc) entering drain inlets or waterways.	Contractor	Construction	Additional safeguard
Soils and Water	Water quality	All workers will be advised of the location of the spill kit and trained in its use.	Contractor	Construction	Additional safeguard
Soils and Water	Water quality	Vehicles and plant must be properly maintained and regularly inspected for fluid leaks.	Contractor	Construction	Additional safeguard
Soils and Water	Water quality	Refuelling of plant and equipment is to occur in impervious bunded areas located a minimum of 50 metres from drainage lines or waterways.	Contractor	Construction	Additional safeguard
Traffic and Transport	Traffic	A TMP will be prepared and implemented as part of the CEMP. The TMP will be prepared in accordance with the Roads and Maritime *Traffic Control at Work Sites Manual* (RTA, 2010) and *QA Specification G10 Control of Traffic* (Roads and Maritime, 2008). The TMP will include: • confirmation of haulage routes • measures to maintain access to local roads and properties • site specific traffic control measures (including signage) to manage and regulate traffic movement	Contractor	Detailed design/ Pre-construction	Additional safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		• measures to maintain pedestrian and cyclist access including alternate routes during construction when required • requirements and methods to consult and inform the local community of impacts on the local road network • access to construction sites including entry and exit locations and measures to prevent construction vehicles queuing on public roads • a response plan for any construction traffic incident • consideration of other developments that may be under construction to minimise traffic conflict and congestion that may occur due to the cumulative increase in construction vehicle traffic • monitoring, review and amendment mechanisms.			
Traffic and Transport	Traffic	A Variable Message Sign (VMS) and traffic alert will be used to notify road users of the planned night works and lane closures.	Contractor	Pre-construction/ construction	Additional safeguard
Traffic and Transport	Access	Where possible, current property accesses are to be maintained during the works. Any disturbance is to be minimised to prevent unnecessary traffic delays.	Contractor	Construction	Additional safeguard
Noise and Vibration	Noise and vibration	A Construction 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 Interim *Construction Noise Guideline* (ICNG) (DECC, 2009) and identify: • nearby sensitive receivers • description of the works, equipment and hours of work	Contactor	Detailed design / pre-construction	Section 4.6 of QA *G36 Environment Protection*

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		• criteria and relevant licence and approval conditions • requirements for noise monitoring • all potential significant noise and vibration generating activities associated with the activity • feasible and reasonable mitigation measures to be implemented, taking into account *Beyond the Pavement: urban design policy, process and principles* (Transport for NSW, 2014) • details of how community consultation would be completed • procedures for handling complaints • in the case of complaint, a monitoring program to assess performance against relevant noise and vibration criteria will occur • arrangements for consultation with affected neighbours and sensitive receivers, including notification and complaint handling procedures • contingency measures to be implemented in the event of non-compliance with noise and vibration criteria • details on how respite would be applied where ongoing high impacts are seen at certain receivers.			
Noise and Vibration	Implement community consultation or notification measures	For activities where the construction noise is predicted to exceed the “Highly Noise Affected” Level: • notification detailing work activities, dates and hours, impacts and mitigation measures, indication of work schedule, any operational noise benefits from the works (where applicable) and contact telephone number • notification shall be a minimum of 7 calendar days prior to the start of works. For projects other than	Contactor	Detailed design / pre-construction	Additional safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		maintenance works more advanced consultation or notification may be required • undertake noise verification measurements, if required • website (if required) • contact telephone number for community Email distribution list (if required) • community drop in session (if required by approval conditions).			
Noise and Vibration	Site inductions	All employees, contractors and subcontractors will receive an environmental induction. The induction must at least include: • all project specific and relevant standard noise and vibration mitigation measures • relevant licence and approval conditions • permissible hours of work • any limitations on high noise generating activities • location of nearest sensitive receivers • construction employee parking areas • designated loading/unloading areas and procedures • site opening/closing times (including deliveries) • environmental incident procedures.	Contractor	Pre-construction/ construction	Additional safeguard
Noise and Vibration	Behavioural practices	• no unnecessary shouting or loud stereos/radios on site • no dropping of materials from height throwing of metal items, door slams etc.	Contractor	Construction	Additional safeguard
Noise and Vibration	Building condition surveys	Building dilapidation surveys will be undertaken on all buildings located within the buffer zone identified in	Contractor	Pre-construction	Additional safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		Table 6-10 of the REF (15m for most buildings) prior to commencement of activities with the potential to cause property damage. It is noted that this requirement can be avoided if measures such as control (light roller) can be used.			
Noise and Vibration	Construction hours and scheduling	Where feasible and reasonable, construction will be carried out during the standard daytime working hours. Work generating high noise and/or vibration levels will be scheduled during less sensitive time periods.	Contractor	Construction	Additional safeguard
Noise and Vibration	Equipment selection	• use quieter and less vibration emitting construction methods where feasible and reasonable. • ensure plant including the silencer is well maintained.	Contractor	Construction	Additional safeguard
Noise and Vibration	Plant noise levels	The noise levels of plant and equipment must have operating Sound Power or Sound Pressure Levels no higher than those in Table 6-8 of the REF.	Contractor	Construction	Additional safeguard
Noise and Vibration	Use and siting of plant	• the offset distance between noisy plant and adjacent sensitive receivers will 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	Additional safeguard
Noise and Vibration	Plan worksites and activities to minimise noise and 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	Contractor	Pre-construction/ construction	Additional safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		• where additional activities or plant may only result in a marginal noise increase and speed up works, limit duration of impact by concentrating noisy activities at one location and move to another as quickly as possible • very noisy activities will be scheduled for normal working hours. If the work cannot be undertaken during the day, it will be completed before 11:00 pm • where practicable, work will 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 • if programmed night work is postponed the work will be re-programmed and the approaches in this guideline apply again.			
Noise and Vibration	Reduced equipment power	Use only the necessary size and power-rating for plant and equipment. Select the minimum where practical to do so, including the vibratory roller.	Contractor	Construction	Additional safeguard
Noise and Vibration	Non-tonal and ambient sensitive reversing alarms	• 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 • consider the use of ambient sensitive alarms that adjust output relative to the ambient noise level.	Contractor	Construction	Additional safeguard
Noise and Vibration	Minimise disturbance arising from delivery of goods to construction sites	• loading and unloading of materials/deliveries is to occur as far as possible from sensitive receivers • select site access points and roads as far as possible away from sensitive receivers. Dedicated loading/unloading areas to be shielded if close to sensitive receivers	Contractor	Construction	Additional safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		• delivery vehicles to be fitted with straps rather than chains for unloading, wherever possible • avoid or minimise these out of hours movements where possible.			
Noise and Vibration	Engine compression brakes	• limit the use of engine compression brakes • 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	Additional safeguard
Noise and Vibration	Shield stationary noise sources such as pumps, compressors, fans etc.	Stationary noise sources will be enclosed or shielded where feasible and reasonable whilst ensuring that the occupational health and safety of workers is maintained. Materials suitable for shielding will have a surface mass of at least 12kg/m^3.	Contractor	Construction	Additional safeguard
Noise and Vibration	Shield sensitive receivers from noisy activities	Use structures to shield residential receivers from noise such as site shed placement; earth bunds; fencing; erection of operational stage noise barriers (where practical) and consideration of site topography when situating plant.	Contractor	Construction	Additional safeguard
Noise and Vibration	Structural surveys and vibration monitoring	• at locations where there are high-risk receptors (receptors within the minimum safe work distance), pre-start and ongoing vibration monitoring will be conducted during the activities causing vibration • where work is within the minimum working distances and considered likely to exceed the cosmetic damage criteria: ○ Investigate alternate construction methods with lower source vibration levels and implement, where feasible (including light vibration roller)	Contractor	Pre-construction/ construction	Additional safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		○ Undertake attended vibration measurements at the start of the work to determine actual vibration levels at the item. Work shall be ceased if the monitoring indicates vibration levels are likely to, or do, exceed the relevant criteria.			
Aboriginal cultural heritage and non-Aboriginal heritage	Aboriginal heritage	• the Standard Management Procedure - *Unexpected Heritage Items* (Roads and Maritime, 2015) will be followed in the event that an unknown or potential Aboriginal object/s, including skeletal remains, is found during construction. This applies where Transport does not have approval to disturb the object/s or where a specific safeguard for managing the disturbance (apart from the Procedure) is not in place • work will only re-commence once the requirements of that Procedure have been satisfied.	Contractor	Detailed design/ pre-construction	Section 4.9 of QA *G36 Environment Protection*
Aboriginal cultural heritage and non-Aboriginal heritage	Non-Aboriginal heritage	• the *Standard Management Procedure - Unexpected Heritage Items* (Roads and Maritime, 2015) will be followed in the event that any unexpected heritage items, archaeological remains or potential relics of Non-Aboriginal origin are encountered • work will only re-commence once the requirements of that Procedure have been satisfied.	Contractor	Detailed design/pre-construction	Section 4.10 of QA *G36 Environment Protection*
Aboriginal cultural heritage and non-Aboriginal heritage	Non-Aboriginal heritage	• if an existing heritage item or item identified on the Roads and Maritime Services s.170 register is on site or in the near vicinity of the works, the item is to be protected to prevent any damage or disturbance.	Contractor	Detailed design/pre-construction	Additional safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
Visual impacts	Visual	• working areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day.	Contractor	Construction	Additional safeguard
Visual impacts	Visual	Construction lighting will be aligned to minimise light spill on adjacent land users, and installed and operated in accordance with AS4282:1997 Control of the Obtrusive Effect of Outdoor Lighting. • residents that may be impacted by light spill will be notified of the work and potential impacts prior to commencement of work requiring artificial lighting.	Contractor	Construction	Additional safeguard
Visual impacts	Visual	• rehabilitation and beautification works in keeping with the existing character of the location will be undertaken to soften the visual impact of the new roundabout and associated works.	Contractor	Rehabilitation	Additional safeguard
Air quality and Waste	Waste	A Waste Management Plan must be prepared that follows the Roads and Maritime Services Technical Guide: *Management of road construction and maintenance waste*. The Waste Management Plan is to include the following measures: • if coal tar asphalt is identified and is to be removed, it is to be disposed of to landfill in accordance with Roads and Maritime Environmental Direction No.21 – Coal Tar Asphalt Handling and Disposal • there is to be no disposal or re-use of construction waste on to other land • waste is not to be burnt on site	Contractor	Pre-construction	Section 4.2 of QA *G36 Environment Protection*

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		• waste material, other than vegetation and tree mulch, is not to be left on site once the works have been completed • working areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day disposal of wastes would be undertaken in accordance with the NSW EPA Waste Classification Guidelines (EPA, 2014) and transported to a suitably licensed waste facility.			
Air quality and Waste	Waste	Resource management hierarchy principles are to be followed: • avoid unnecessary resource consumption as a priority • avoidance is followed by resource recovery (including reuse of materials, reprocessing, recycling and energy recovery) disposal is undertaken as a last resort (in accordance with the Waste Avoidance & Resource Recovery Act 2001).	Contractor	Construction	Additional safeguard
Air quality and Waste	Air quality	An Air Quality Management Plan (AQMP) will be prepared and implemented as part of the CEMP. The AQMP will include, but not be limited to: • potential sources of air pollution • air quality management objectives consistent with any relevant published EPA and/or OEH guidelines • mitigation and suppression measures to be implemented • methods to manage work during strong winds or other adverse weather conditions.	Contactor	Detailed design / pre-construction	Section 4.4 of QA *G36 Environment Protection*

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		a progressive rehabilitation strategy for exposed surfaces.			
Air quality and Waste	Air quality	Measures (including watering or covering exposed areas) are to be used to minimise or prevent air pollution and dust.	Contractor	Construction	Additional safeguard
Air quality and Waste	Air quality	• Works (including the spraying of paint and other materials) are not to be carried out during strong winds or in weather conditions where high levels of dust or air borne particulates are likely.	Contractor	Construction	Additional safeguard
Air quality and Waste	Air quality	• Vehicles transporting waste or other materials that may produce odours or dust are to be covered during transportation.	Contractor	Construction	Additional safeguard
Air quality and Waste	Air quality	• Disturbed areas are to be progressively rehabilitated	Contractor	Construction	Additional safeguard
Other impacts	Utilities	Prior to the commencement of works: • the location of existing utilities and relocation details will be confirmed following consultation with the affected utility owners • if the scope or location of proposed utility relocation works falls outside of the assessed proposal scope and footprint, further assessment will be undertaken.	Contactor	Detailed design / pre-construction	Additional safeguard
Other impacts	Hazards and risk management	A Hazard and Risk Management Plan (HRMP) will be prepared and implemented as part of the CEMP. The HRMP will include, but not be limited to: • details of hazards and risks associated with the activity	Contactor	Detailed design / pre-construction	Additional safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		• measures to be implemented during construction to minimise these risks • record keeping arrangements, including information on the materials present on the site, material safety data sheets, and personnel trained and authorised to use such materials • a monitoring program to assess performance in managing the identified risks • contingency measures to be implemented in the event of unexpected hazards or risks arising, including emergency situations. • the HRMP will be prepared in accordance with relevant guidelines and standards, including relevant Safe Work Australia Codes of Practice, and EPA or Office of Environment and Heritage publications.			

3.3 Licensing and approvals

No additional approvals are required for the proposal. The approvals, as outlined in the REF, are summarised below in Table 3-2.

Table 3-2: Summary of licensing and approval required

Instrument	Requirement	Timing
Crown Land Management Act 2016 (Division 3.4, 5.5 and 5.6)	Lease or licence to occupy areas of Crown land.	Prior to start of the activity
Roads Act 1993 (NSW) (s138)	A road occupancy licence (ROL) for road closures associated with construction. SZA- Speed Zone Authorisation to temporarily reduce road speed limit during construction activities.	Prior to start of the activity

4. References

Transport for NSW. (2021, September), Tumut intersection upgrade, Review of Environmental Factors.

Transport for NSW. (2020, September). Safety Assessment Gocup Road, Tumut: Executive Summary. Retrieved from Centre for Road Safety: ***https://roadsafety.transport.nsw.gov.au/downloads/review-gocup-road-tumut.pdf***