

# Newell Highway Upgrade at Coonabarabran

Submissions report

Transport for NSW | September 2021





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# Executive summary

## The proposal

Transport for NSW (TfNSW) proposes to build a new highway bypass of Coonabarabran, NSW (the proposal). The proposal would include a new two-lane, two-way highway east of the existing Newell Highway alignment which currently runs through the Coonabarabran town centre.

The proposal is located in the Warrumbungle Local Government Area (LGA) about 120 kilometres north-east of Dubbo central business district (CBD) and 335 kilometres north-west of Sydney CBD. The location and an overview of the proposal is provided in Figure 1-1.

Key features of the proposal would include:

- A new two-lane, two-way road, about eight kilometres long to the east of Coonabarabran, between the Newell Highway and Oxley Highway with a posted speed limit of 110 kilometres per hour
- Changes to the intersection arrangement of the Newell Highway and Oxley Highway to the north of Coonabarabran
- Intersections and local road adjustments at Purlewaugh Road and River Road
- A bridge crossing of the Castlereagh River
- Two stock culverts; one under the highway just south of Purlewaugh Road and a private stock access under the highway between River Road and Chinamans Gully
- Property acquisitions, adjustments and changes to some property accesses
- Drainage adjustments and utility relocations
- Temporary ancillary facilities during construction including water quality controls, site offices and stockpile sites.

## Display of the Review of Environmental Factors

TfNSW prepared a Review of Environmental Factors (REF) for the Newell Highway Upgrade at Coonabarabran. The REF was publicly displayed between 30 November 2020 and 29 January 2021 at Coonabarabran Macquarie Regional Library, Warrumbungle Shire Council and available for download on the TfNSW project web page.

The display locations and website link were advertised in the Coonabarabran Times, via local radio, NSW Roads Facebook page and the TfNSW project website. During this time, TfNSW invited the public to provide feedback on the proposal. TfNSW also met with residents and businesses who would be directly affected by the proposal.

## Summary of issues and responses

Public display of the REF and concept design resulted in a total of 28 submissions, of which 27 were from the general community and one was from Warrumbungle Shire Council.

Almost 18 per cent of the submissions supported the proposal, with one submission objecting to the proposal. However, most feedback from the community did not specifically state whether they supported or objected to the proposal, instead focusing their submission on particular areas of concern or interest.

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

### ***Bypass intersections***

A total of eight submissions raised issues regarding the bypass intersection. Concerns were raised on the safety of the movement of vehicles of all sizes at the proposed bypass intersections at Purlewaugh Road and River Road. Design alternatives were requested for consideration, including the inclusion of an overpass, underpass or exit slip roads.

As detailed in Section 2.2 of this Submissions Report, the proposed intersections have been designed to meet road design standards and designed to cater for the anticipated vehicle types and numbers turning at the intersections. The movement of large vehicles have been assessed to be able to safely move in east and west directions along Purlewaugh Road. The storage length of the right turn lane at this road has been designed to measure 100 metres long and would safely fit a number of vehicles waiting to turn.

Further traffic investigations would be conducted during detailed design, which will include consideration of sight distance. Additional safety considerations regarding the design of intersections along the bypass will occur during detailed design.

### ***Socio-economic impacts***

#### ***Business impacts and tourism***

A total of five submissions, including Warrumbungle Shire Council, raised concerns of local businesses being adversely impacted by the diversion of traffic away from the town centre, potentially removing a large amount of exposure the town receives from tourism and travellers. Further issues raised include limitations of the business survey conducted as part of REF investigations, requests for diversions to attractions in town, as well as local procurement for goods and services required for construction.

The proposal design includes signage directing traffic into town, as detailed in Section 6.5.3.2 in the REF. This signage has been designed in accordance with appropriate Austroads and TfNSW Guidelines. The proposed bypass has been designed to include provision of access and active promotion of the town through intersections and signage.

#### ***Amenity***

A total of four submissions, including Warrumbungle Shire Council raised issues regarding light, noise and dust impacts on residents adjacent to the proposed bypass during the design, construction and operational stages of the project.

TfNSW understands the light impacts that would arise from the construction and operation of the proposal, particularly at River Road and Purlewaugh Road. To address this issue, an urban design and landscaping plan has been proposed and detailed within the Landscape Character and Visual Impact Assessment Report provided as part of the REF.

Noise management measures such as at-property treatments would be further considered at detailed design stage and TfNSW will consult with affected property owners.

The proposed highway bypass would reduce existing issues regarding noise emissions and air/odour pollution caused by large vehicles travelling through the centre of Coonabarabran. The proposal would improve amenity and safety issues by allowing trucks and fast flowing traffic to bypass the town. For newly introduced amenity impacts to areas not previously exposed to highway traffic, management measures have been proposed in Section 6.2.5 and 6.3.4 of the REF.

## Property access

A total of four submissions raised concern over the location and quality of property access for owners. TfNSW will continue to consult with all affected property owners to assess individual concerns during the detailed design phase.

## Property operations and adjustments

A total of six submissions were made by affected property owners and Warrumbungle Shire Council regarding internal property access arrangements for land severed by the proposed bypass, fencing of new boundary lines, and impacts to bore water as well as impacts to Travelling Stock Routes.

TfNSW will consult further with all affected property owners individually to address their concerns about impacts as a result of the proposal, including property accesses and access to water during the detailed design phase.

To ensure water supply is not adversely impacted by the proposal, the installation of new bores or dams on private properties may be considered. TfNSW will liaise with all affected property owners individually to address concerns regarding access to water during the detail design phase.

## Property acquisition and land values

A total of six submissions have raised issues regarding the property acquisition process, timing and financial value of properties as a result of the proposal.

Property acquisition valuations will be performed in accordance with NSW Government requirements.

## **Traffic and transport**

A total of 10 submissions raised issues regarding speed limit changes along the proposed bypass, the requirement of associated speed limit signage, limitations of the traffic modelling conducted, and safety concerns for shared road users.

The highway would be posted at 110 kilometres per hour which is consistent with other sections of the Newell Highway. Appropriate speed limit signage would be installed on the bypass as well as local roads at the intersection locations. The posted speed limit will comply with Austroads and TfNSW standards.

In response to the increased traffic volume since the opening of the Ulamabri silos and change in drought conditions, further traffic investigations would be undertaken during the detailed design stage to assess the latest east / west vehicle movements and volumes.

The bypass has been designed in accordance with relevant standards for public roads and will be consistent with the Newell Highway north and south of Coonabarabran. The lanes will be 3.5 metres wide with three metre wide shoulders along both directions of the bypass. These shoulders could be used by cyclists. Pedestrian and cyclist demand is expected to be low, therefore the provision for dedicated active transport facilities have not been included in the current design at the Purllewaugh Road intersection. The large culvert south of Purllewaugh Road has been proposed to continue the Travelling Stock Route, however given its intended use, it is not a designated cycling facility.

## Changes to the proposal

The REF proposal included the development of a new intersection to connect the existing and new alignments of the Newell Highway. This intersection would be located at the southern end of the new bypass. A revision of this design has been proposed in this submissions report to shift the intersection further to the north-east. This update has been proposed to improve road safety by increasing sight lines and creating additional intersection queue storage when vehicles enter and leave town.

This proposed design update would require vegetation clearing of the same plant community types and have a similar impact area to that identified in the REF. The property acquisition required for the construction of the new design has been assessed in the REF. The impacts of these factors are consistent with those detailed in the REF and do not require further assessment.

The REF proposed the removal of a section of existing rail line on the eastern side of the intersection of the Newell Highway and River Road. TfNSW is continuing investigations into the management of the railway line in consultation with relevant stakeholders. Any changes to environmental impacts will be assessed during detailed design.

## Additional assessment

A revision was made to the traffic modelling to predict the traffic volumes at intersections within the town of Coonabarabran. Updated traffic data was considered in the model for the intersections at Newell Highway / Dalgarno Street and Newell Highway / Edwards Street, with traffic volumes changing for northbound and westbound directions. The main findings of this assessment remained consistent with that identified in the REF, with an overall forecasted decrease in traffic volume through town when comparing the introduction of the bypass to a road network without the bypass.

## Next steps

As the determining authority, TfNSW will consider the information in the REF and this submissions report and make a decision whether or not to proceed with the proposal.

TfNSW 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.

# 1. Introduction and background

## 1.1 The proposal

Transport for NSW (TfNSW) proposes to build a new highway bypass of Coonabarabran, NSW (the proposal). The proposal would include a new two-lane, two-way highway east of the existing Newell Highway alignment which currently runs through the Coonabarabran town centre.

The proposal is located in the Warrumbungle local government area (LGA) about 120 kilometres north-east of Dubbo central business district (CBD) and 335 kilometres north-west of Sydney CBD. The location and an overview of the proposal is provided in Figure 1-1.

Key features of the proposal would include:

- A new two-lane, two-way road, about eight kilometres long to the east of Coonabarabran, between the Newell Highway and Oxley Highway with a posted speed limit of 110 kilometres per hour
- Changes to the intersection arrangement of the Newell Highway and Oxley Highway to the north of Coonabarabran
- Intersections and local road adjustments at Purlewaugh Road and River Road
- A bridge crossing of the Castlereagh River
- Two stock culverts; one under the highway just south of Purlewaugh Road and a private stock access under the highway between River Road and Chinamans Gully
- Property acquisitions, adjustments and changes to some property accesses
- Drainage adjustments and utility relocations
- Temporary ancillary facilities during construction including water quality controls, site offices and stockpile sites.

An overview of the proposal is illustrated in Figure 1-1.

A more detailed description of the new highway bypass of Coonabarabran, NSW (the proposal) is provided in the Newell Highway Upgrade at Coonabarabran Review of Environmental Factors (REF) prepared by TfNSW in November 2020. Objectives and justification of the proposal are detailed in Chapter 2 of the REF.

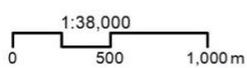


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- The design
- + Railway



Source: Aurecon, LPI



## 1.2 REF display

The REF for the proposal was publicly displayed between 30 November 2020 and 29 January 2021. The REF was placed on the TfNSW project website and made available for download and displayed in hardcopy at two locations (refer to Table 1-1). The display locations and website link were advertised in the Coonabarabran Times and the project page on the TfNSW project website.

Table 1-1: Display locations

Location	Address
Macquarie Regional Library	John Street, Coonabarabran NSW 2357
Warrumbungle Shire Council	14-22 John Street, Coonabarabran NSW 2357

The community was also invited to an online information session held via Facebook on December 15 2020. In addition, during the display period, TfNSW held meetings with affected property owners.

## 1.3 Purpose of the report

This submissions report relates to the REF prepared for the Newell Highway Upgrade at Coonabarabran and should be read in conjunction with that document.

The REF was placed on public display and submissions relating to the proposal and the REF were received by TfNSW. This submissions report summarises the issues raised and provides responses to each issue (Chapter 2). It also describes changes to the proposal (Chapter 3), assesses the environmental impact of changes to the proposal (Chapter 3.2) and identifies new or revised environmental management measures (Chapter 5).

No proposal changes are proposed that would require the preparation of a preferred infrastructure report.

Some revisions have been to the environmental management measures as described in the REF and these have been identified in Chapter 5.

## 2. Response to issues

TfNSW received 28 submissions, accepted up until the 29 January 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 2 of this report.

Table 2-1: Respondents

Respondent	Submission No.	Section where issues are addressed
Individual	1	2.3, 2.6, 2.7, 2.8.3, 2.8.4, 2.8.5, 2.13
Individual	2	2.3
Individual	3	2.8.2
Individual	4	2.2, 2.11
Individual	5	2.8.2, 2.13
Individual	6	2.2
Individual	7	2.11
Individual	8	2.13
Individual	9	2.2
Individual	10	2.8.2
Individual	11	2.8.1, 2.9
Individual	12	2.8.4, 2.8.5, 2.10
Individual	13	2.3, 2.8.4, 2.10, 2.11
Individual	14	2.2, 2.13
Individual	15	2.2
Individual	16	2.13
Individual	17	2.11
Individual	18	2.2, 2.8.4
Individual	19	2.11
Individual	20	2.8.1, 2.8.2, 2.11
Individual	21	2.11, 2.13
Warrumbungle Shire Council	22	2.2, 2.4, 2.5, 2.7, 2.8.1, 2.8.2, 2.8.4, 2.8.5, 2.9, 2.12
Individual	23	2.2, 2.11
Individual	24	2.8.5
Individual	25	2.8.3
Individual	26	2.6, 2.8.4, 2.8.5, 2.11
Individual	27	2.5, 2.8.1

Respondent	Submission No.	Section where issues are addressed
Individual	28	2.8.1, 2.8.5

## 2.1 Overview of issues raised

A total of 28 submissions were received in response to the display of the review of environmental factors. This included submissions from Warrumbungle Shire Council and 27 from the community.

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

Almost 18 per cent of the submissions supported the proposal, with only one submission objecting to the proposal. However, most feedback from the community did not specifically state whether they supported or objected, and instead, just raised issues of concern.

Warrumbungle Shire Council raised a number of issues, particularly around:

- property and land use impacts
- town amenity and business impacts
- comments on the design of the proposal.

The main issues raised by the public were:

- impacts to agricultural property operations
- property acquisition queries
- impacts to property access
- concern around the design of the River Road and Purlewaugh Road intersection including safety concerns for active transport users
- concerns around business impacts.

## 2.2 Bypass intersections

### ***Submission number(s)***

4, 6, 9, 14, 15, 18, 22, 23

### ***Issue description***

- The current staggered T-intersections at Purlewaugh and River Road are unsafe for local traffic crossing the fast flowing highway traffic, which may increase the chance of collision. In particular, B-doubles on Purlewaugh Road, waiting to cross the bypass. Alternative intersection layouts should be considered, such as overpass or underpass or exit slip roads should be included in the design. Has the intersection of the Newell and Oxley Highways been designed to facilitate trucks of all sizes heading north to turn right easily and safely to travel to Gunnedah via the Oxley Highway, especially when bushfire closes the Pilliga? Provision of major signage will also be required to inform traffic that they need to re-route to Gunnedah.

- Council proposes TfNSW designs bypass with vehicle overpass/underpass arrangements for intersections of Oxley Highway, Purlewaugh Road and River Road
- Council would expect that access and exits for the above intersections would be sign posted at 60kms/hr with a design of 70kms/hr
- Council requests that east-west traffic movements along Purlewaugh Road are further considered. Access to Purlewaugh Road should be restricted for B-Double trucks, which should use the proposed intersection of Oxley Highway and Newell Highway.

## **Response**

- The proposed intersections would meet road design standards and be designed to cater for the anticipated vehicle types and numbers turning at the intersections.

For Purlewaugh Road, the intersection has been designed to accommodate the safe east / west movement of a vehicle up to the size of a 26 metre B-double. The storage length of the right turn lane between the two legs of Purlewaugh Road have been designed to be around 100 metres long to fit a number of vehicles waiting to make the turn.

Further traffic investigations (including consideration of sight distance checks) and consideration of layout design would be undertaken during the detailed design stage to assess road safety at these intersections.

- The proposed bypass and associated intersections have been designed to accommodate heavy vehicles turning on / off the highway.

Overall project signage has been designed as per Austroads and TfNSW Guidelines. Further signage for detours during emergencies in the Pilliga Forest would be considered during the detailed design stage. Further traffic investigations would be considered during the detailed design stage to assess road safety further at these intersections and the requirement for any additional signage.

- Grade separated options for the Purlewaugh Road and Oxley Highway intersections were considered in the early stages of concept design, however these were not further developed due to insufficient traffic demand. Staggered T intersections are safe solutions that are commonly used throughout the network on high speed sections with higher traffic volumes. Additional safety enhancements for the T intersections will be explored further during detail design.

All proposed intersections as designed would meet current road design standards and cater for the anticipated vehicle types and numbers. Further traffic investigations would be carried out during the detailed design stage to assess road safety further at these locations.

- The proposed intersections have been designed and speed limits set to meet road design standards and be designed to cater for the anticipated vehicle types and numbers. Further traffic investigations would be considered during the detailed design stage to assess road safety at these intersections.
- The diversion of east-west travelling B-Double trucks between Baradine Road and Purlewaugh Road is to be investigated further during detailed design. The route suggested by Warrumbungle Shire Council would be via the oversize vehicle route (Saleyards Road and Gardener Street), the northern Newell/Oxley Highway intersection and then south along the bypass.

## 2.3 Construction

### **Submission number(s)**

1, 2, 13

### **Issue description**

- A new water supply line is to be constructed for ongoing water supply from the bore. Who would maintain the pipe?
- Would prefer that construction jobs are kept local
- Would like further details on a potential site compound that has been identified on their property
- Property owners interested in supplying water to the contractor.

### **Response**

- The construction contractor would be responsible for the maintenance of the water supply pipe in the event it is damaged during construction. Once construction is complete, any adjustments performed on private property as part of the project become the responsibility of the property owner.
- TfNSW would undergo a transparent procurement process to engage a Construction Contractor to do the works. This will be in line with TfNSW and government procurement and quality processes. The contractor could choose to source sub-contractors and materials locally where available, providing they meet TfNSW quality guidelines.
- The site compound located within this property is required early in the construction stage for the construction of the Castlereagh River bridge and piling works. TfNSW and the construction contractor would continue to assess suitable locations for site compounds, in consultation with property owners. If construction compounds are located on private property, TfNSW would enter into a leasing agreement based on agreement made at the time.
- TfNSW acknowledges the property owner's interest in supplying water during the construction of the proposal. This would be dependent on the contractor's needs.

## 2.4 Asset management

### **Submission number(s)**

22

### **Issue description**

- Council request clarification on where responsibilities of new intersections lie between Warrumbungle Shire Council and TfNSW
- Council request that the transfer of infrastructure items to Warrumbungle Shire Council are of an appropriate standard.

### **Response**

- The general intention is that all local roads would become the responsibility of Warrumbungle Shire Council up to the intersection of the Newell Hwy. This would be clarified further and agreed with Council during the detailed design phase.

- TfNSW would consult and liaise with Warrumbungle Shire Council during detailed design with regards to asset handover.

## 2.5 Biodiversity

### **Submission number(s)**

22, 27

### **Issue description**

- Council request identification of replacement strategy for potentially destroyed hollow bearing trees and use local groups to make replacements.
- Council propose that koala warning signs are placed along bypass as the area is identified as 'highly suitable Koala Habitat' and include information about managing koala population.
- Council query the period of time that TfNSW would control weeds following construction of bypass?
- Council propose that should the Diamond Firetail require relocation, it is undertaken prior to construction
- Concerns for potential impacts of the proposal on the natural environment, notably the river systems.

### **Response**

- The proposal aims to minimise the removal of vegetation. However, the proposal would require the removal of some vegetation and species habitat features including hollow bearing trees. A range of management measures have been proposed as part of the REF to retain or re-establish where possible, species habitat features. These include the development of a nest box strategy (environmental mitigation measure Bi13). TfNSW would reach out to local groups, such as Men's shed, during detail design regarding involvement in the nest box strategy.
- The biodiversity assessment undertaken as part of the REF considered the likelihood and specifically investigated the presence of Koala within and adjacent to the proposal. No individuals were detected in or near the proposal area, and records of Koalas are over 10 years old. As such, due the low likelihood of presence, Koala warning signs are not required. However, wildlife rescue signs or similar will be explored further during detail design.
- Areas that would be landscaped along the highway would generally be handed over to Warrumbungle Shire Council following the completion of construction. Weed management and maintenance post construction will be discussed further with Council during detail design.
- As detailed in Section 6.1.4 of the REF, the proposal commits to relocating a viable local population of the Diamond Firetail to vacant habitat in an area managed in perpetuity for conservation. This would be undertaken in accordance with the NSW DPIE Translocation Operational Policy May 2019 and would be undertaken prior to construction of the bypass by a qualified ecologist.
- The proposal has sought to minimise environmental impacts through its design, including minimising vegetation clearing and designing the Castlereagh River bridge so that there are no piers in the water channel to minimise water flow and habitat impacts.

In addition, erosion and sediment controls are detailed in Section 6.8.2 of the REF for both construction and operation stages, including the implementation of Progressive Erosion and Sediment Control Plans (PESCPs). The PESCPs would be continually updated during construction.

## 2.6 Noise and vibration

### **Submission number(s)**

1, 26

### **Issue description**

- The construction noise impact to our nearby residence has been underestimated. Potential sound barriers should be installed to mitigate against operational noise impacts.
- Concern for residents who would be impacted by the noise generated from new alignment shifting closer to their properties.

### **Response**

- Noise impacts have been assessed in Section 6.2 of the REF. A noise assessment has been undertaken for the project including noise monitoring and computer modelling of potential construction and operational noise impacts. Predicted construction noise levels have been based on computer noise modelling using known noise levels from common road construction machinery and vehicles.

Unattended noise monitoring was completed in the study area during October and November 2019. The measured noise levels have been used to determine the existing noise environment and to set the criteria used to assess the potential impacts from the proposal.

A number of management measures have been proposed to mitigate construction noise to surrounding nearby sensitive receivers. While noise barriers were considered, they were found to not be a feasible mitigation option as the spread of receivers would require a large portion of the proposal to be lined with barriers. At-property treatments were considered most feasible to mitigate noise impacts for impacted residents as this treatment would be applied at-property and are most appropriate for rural properties.

During the detailed design stage, further noise assessment and consideration of management measures for construction would be undertaken, including consideration of operation noise mitigation measures (such as architectural treatments to residences where applicable). TfNSW would consult with impacted property owners and investigate mitigation options during the detailed design stage.

## 2.7 Landscape character and visual amenity

### **Submission number(s)**

1, 22

### **Issue description**

- Concerned that the impacts to landscape views and visual character due to the proposal have been underestimated. Concerned over light disturbance at night, when vehicle headlights shine into property travelling on River Road. Tree removal during construction may exacerbate impact. If power poles are to be replaced near the property, it should occur in a way that does not hinder visual amenity of the property.
- Council requests that plant material for landscaping to be sourced from Warrumbungle Shire or other local plant propagators.

### **Response**

- Impacts to landscape views and mitigation measures proposed are discussed in Section 6.3.4.3 of the REF. Proposed measures to conserve and enhance the current landscape character of the roadway include minimising vegetation removal. An urban design and landscaping plan (environmental management measure L1), which would include revegetation, would be developed prior to construction. This is based on findings of the Landscape Character and Visual Impact Assessment provided as part of the REF. TfNSW understands that there will be some light impacts as part of the proposal, including from side roads such as River Road and Purlewaugh Road. An urban design and landscaping plan (environmental management measure L1), which would include revegetation, would be further developed prior to construction. This plan considers and allows for factors such as light spill by including large growing tree species in potentially affected areas. The plan is based on findings of the Landscape Character and Visual Impact Assessment report provided as part of the REF.  
There would be limited street lighting along the bypass, with only intersections being lit for safety purposes. In addition, as the proposal falls within the Warrumbungle International Dark Sky Park, all lighting would meet the requirements of the Dark Sky Planning Guideline (DPE, 2016). There are currently no new electrical lines proposed along the bypass alignment as part of this proposal. If required, the only power pole relocations will be minor along adjoining roads such as Purlewaugh Road and River Road, to facilitate road safety.
- TfNSW aim to consult with Warrumbungle Shire Council regarding the availability of local plant propagators during the detailed design stage. The REF includes an environmental management measure Bi6, to appoint a commercial plant propagator for the proposal.

## 2.8 Socio-economic

### 2.8.1 Business impacts and tourism

#### ***Submission number(s)***

11, 20, 22, 27, 28

#### ***Issue description***

- Coonabarabran needs a series of sensible upgrades including diversions to town and signage of tourist attractions, local businesses, food, accommodation and entertainment available to encourage travelers to stop and see what is on offer.
- Other improvements in Coonabarabran required include an adventure playground well positioned for travelers to use when resting, eating and even staying in town, and absolutely important that we upgrade the town pool
- Not supportive of proposal, concerned of the local businesses being negatively impacted by the potential drop in tourism / visitors to town.
- Council request that TfNSW ensures goods, services and materials are sourced locally where possible
- The business survey for the REF was not sufficient due to limited time, limited town visitors interviewed compared to locals, rain on survey days which limits visitors, no inclusion of surrounding towns who visit Coonabarabran and survey conducted in February which is generally a low season for visitors. Council believe that TfNSW should engage a consultant to conduct an independent survey with local businesses and provide Council with copies of the survey.
- Propose TfNSW consult with Council and the Coonabarabran and District Chamber of Commerce to improve signage for exits, road closures and promote the town and surrounds.
- Coonabarabran has around 2,500 people, which would be more at risk of adverse economic impacts from a highway bypass than larger towns. Council recommends a more detailed assessment and strategy to address these potential impacts, as well as consulting with Council and the Coonabarabran and District Chamber of Commerce

#### ***Response***

- The bypass includes the provision of intersection access into town with appropriate exit signage and town promotion signage (refer to Section 6.5.3.2 in the REF). This town signage aims to promote the town and regional markers so travelers are encouraged to enter the town of Coonabarabran. Overall proposal signage has been designed in accordance to Austroads and TfNSW Guidelines.  
TfNSW will continue to consult with Warrumbungle Shire Council and businesses during detailed design.
- The development of recreational facilities such as playgrounds and rest stops within Coonabarabran are outside the scope of this proposal and is recommended to be referred to Warrumbungle Shire Council, for their consideration.
- TfNSW would undergo a transparent procurement process to engage a Construction Contractor to do the works. This will be in line with TfNSW and government procurement and quality processes. The contractor could choose to source sub-contractors and materials locally where available, providing they meet TfNSW quality guidelines. Construction contractors would be encouraged to approach local industry wherever possible.

- TfNSW will consult with Warrumbungle Shire Council to source any additional available information that Council may have regarding local businesses and tourism for further consideration during the detailed design stage.
- TfNSW has developed the bypass in consideration to actively promote the town and provide opportunities for the travelling public to access town. This includes provision of access into town at all four intersection locations and the provision of 'Bypassed Town signage'. The bypassed town signage provides images of the town to encourage motorists to turn into town.

TfNSW will continue to consult with Warrumbungle Shire Council regarding the proposal.

- TfNSW has developed the bypass in consideration to actively promote the town and provide opportunities for the travelling public to access town. This includes provision of access into town at all four intersection locations and the provision of 'Bypassed Town signage'. The bypassed town signage provides images of the town to encourage motorists to turn into town.

There is no requirement for further socio-economic studies to be conducted following the concept design phase of the project, however TfNSW will continue to consult with Warrumbungle Shire Council regarding the proposal during detailed design.

## 2.8.2 Amenity

### **Submission number(s)**

3, 5, 20, 22

### **Issue description**

- The bypass would lead to adverse noise, light and dust impacts for nearby residents on River Road and Purlewaugh Road, lack of privacy and security and disrupt the current 'dark sky' environment. Requests that proposal addresses the existing concerns of noise, pollution, safety, and transport efficiency of freight vehicles travelling through town. Council requests that TfNSW establish a structure for dealing with noise, light and dust issues during design, construction and operational stages of proposal

### **Response**

- The proposal would introduce amenity impacts to areas which currently are not exposed to highway impacts. To mitigate these amenity impacts, a range of assessments and management measures have been proposed.

TfNSW understands that there will be some light impacts as part of the proposal, including from side roads such as River Road and Purlewaugh Road. An urban design and landscaping plan (environmental management measure L1), which would include revegetation, would be further developed prior to construction. This plan considers and allows for factors such as light spill by including large growing tree species in potentially affected areas. This plan is based on findings of the Landscape Character and Visual Impact Assessment report provided as part of the REF.

There would be limited street lighting along the bypass, with only intersections being lit for safety purposes. In addition, as the proposal falls within the Warrumbungle International Dark Sky Park, all lighting would meet the requirements of the Dark Sky Planning Guideline (DPE, 2016).

Noise management measures such as at-property treatments would be further considered during the detailed design stage and in consultation with affected property owners (refer to environmental management measure NV10).

- As detailed in the REF, the existing highway through town has a number of amenity impacts, such as noise emissions and air/odour pollution. There are also road safety concerns with heavy vehicles travelling along the highway in proximity to local vehicular and pedestrian traffic. The opening of the

bypass would improve amenity and safety issues in the centre of Coonabarabran, by allowing trucks and fast flowing traffic to bypass the town. The proposal would introduce amenity impacts to areas which currently are not exposed to highway impacts. To mitigate these amenity impacts, a range of assessments have been undertaken and management measures have been proposed.

An urban design and landscaping plan (environmental management measure L1), which would include revegetation, would be developed prior to construction. This is based on findings of the Landscape Character and Visual Impact Assessment report provided as part of the REF.

### 2.8.3 Property access

#### ***Submission number(s)***

1, 10, 12, 25

#### ***Issue description***

- Affected property owners were concerned over location and quality of their property access.

#### ***Response***

- TfNSW will contact all affected property owners individually to address their concerns regarding property accesses. During the detailed design phase of the proposal, further design and consideration of property access would be undertaken in consultation with all affected property owners.

### 2.8.4 Property operations and adjustments

#### ***Submission number(s)***

1, 12, 13, 18, 22, 26

#### ***Issue description***

- A number of affected property owners whose properties would be severed requested further details on the internal property access arrangements for their properties
- A number of affected property owners requested access directly across the bypass between severed property parcels.
- A number of affected property owners and Council requested that severed properties be fenced, where a new boundary line is created.
- A number of affected property owners raised concern over severance/ loss of water supplies including access to bores and dams, which are critical for the operation of properties in terms of residential and agricultural use.
- Council requests that to prevent impacts on residents who rely on bore water, TfNSW should install water bore(s) for the proposal in consultation with residents, and liaise with Council, RFS and other groups to potentially use the bore(s) as an asset for the local community. The bore should be monitored to assess the impacts of the bore on the aquifer and nearby properties.
- The location of the highway splits our pastures and will create ongoing difficulties in managing the property.
- Council requests that TfNSW consider the use of oversized farm machinery by properties adjacent to the bypass and ensure they are not impacted by the proposal

- Council requests that TfNSW ensure that stock underpasses are constructed to ensure water is adequately drained and maintained.
- Council require clarification whether Travelling Stock Routes would be impacted by the proposal and how these will be managed. **Response**
- TfNSW will contact all affected property owners individually to address their current concerns around property access. During the detailed design phase, further design work on property access including location and the type of vehicle that it would need to cater for would be undertaken. This would be done in consultation with property owners.
- TfNSW will contact all affected property owners individually to address their current concerns around access between severed parcels of land. Cross highway access between severed property parcels are currently not provisioned for in the proposal. At-level access directly across the proposed bypass may not be permitted due to safety concerns posed by high speed traffic. Alternatives could include the provision of a tall culvert, if there is sufficient space under the bypass to join parcels of land. However, cross highway access would be reviewed further by TfNSW during the detailed design stage and in consultation with landowners.
- Property adjustments are negotiated with property owners individually and agreements reached accordingly. “Like for like” property adjustments, including fences, will be offered to affected property owners unless negotiated otherwise. Fencing types would be in accordance with TfNSW standards and guidelines.
- TfNSW will contact all affected property owners individually to address their current concerns around access to water. During detailed design and as part of property adjustment discussions, TfNSW will further consult with affected property owners regarding bore / dam availability in the longer term. If the current supply is no longer suitable for property owners, then TfNSW would install a suitable replacement water supply.
- TfNSW commits to ongoing consultation with affected property owners to ensure water supply is not adversely impacted. This may include installing new bores / dams on private properties to replace those adversely affected by the bypass.

There is not likely to be any remaining bores after construction to become a legacy asset as they will either be required to be decommissioned as part of the construction of the bypass, or they will remain under the private ownership of property owners.

- TfNSW will continue to consult with affected property owners regarding property severance and ongoing property operations. This is identified as environmental management measure SE5 in the REF.
- Over Size and Over Mass vehicles would be subject to obtaining the relevant permits as per TfNSW requirements to travel on roads.
- The stock underpasses are designed to be self-draining. Maintenance will be similar to the maintenance regime for other sections of the Newell Highway and other TfNSW roads in the region where there are stock underpasses.
- The proposal would not affect the Travelling Stock Route along the Newell / Oxley Highway north of Coonabarabran. However, the Travelling Stock Route along Purlewaugh Road would be interrupted. To ensure continue use of this Travelling Stock Route, a 3m x 3m culvert is proposed to be incorporated under the bypass south of Purlewaugh Road. This would be further detailed in the detailed design stage.

## 2.8.5 Property acquisition and land values

### **Submission number(s)**

1, 12, 22, 24, 26, 28

### **Issue description**

- A number of property owners queried the acquisition process and timing. This includes concerns about compensation for assets, future income and concerns on building entitlement.
- A property owner noted that discussions by TfNSW for areas of acquisition differed from the online reports.
- Council proposes that remaining land fragments left after land acquisition also be acquired by TfNSW as opposed to remaining in private ownership, as these land areas would no longer be habitable. Property owner queried areas of the design and made some suggestions that could result in a reduction of property acquisition.
- A member of the community queried whether the proposal would result in a reduction in property prices in the area.

### **Response**

- The property acquisition process as part of the proposal involves the compensation of property for property owners. TfNSW commit to ongoing consultation with property owners to minimise any hardship caused because of the proposal. Any hardship applications would be considered on a case by case basis and will be determined on its own merits.

Most of the property acquisitions for the proposal would involve a partial property acquisition. This is valued by using a 'before and after' method where:

- the value of the total property, as unaffected by the project proposal, known as the 'before valuation' is determined
- the value of the remaining property assuming the acquisition has occurred, is also determined. This is known as the 'after valuation'
- the difference between the 'before' and 'after' valuations is the compensation payable by the acquiring agency.

This process considers the future potential of the land (assumed without the proposal affecting the property).

As part of the acquisition process, TfNSW will work with Warrumbungle Shire Council and discuss with affected property owners the building entitlement on their properties so that an informed decision can be made on building on remaining land parcels.

- TfNSW acknowledged the online reports did not include a portion of property acquisition that had been discussed with the property owner. This was due to the stage of the design that had been considered. The extent of property acquisition would be further refined during the detailed design of the proposal.
- TfNSW will acquire all land required for construction of the bypass. Any remnant fragments too small or otherwise unsuitable for re-sale following construction are likely to be incorporated into the road reserve.
- TfNSW will review the design during the detailed design stage that could result in a reduction in property acquisition.
- TfNSW is consulting with property owners affected by the proposal. Property acquisition valuations will be performed in accordance with NSW Government requirements.

## 2.9 Land use

### **Submission number(s)**

11, 22

### **Issue description**

- Rezoning should be allowed around the bypass which will allow new building blocks for residents to access for residential and lifestyle accommodation. Council requests that TfNSW identifies sites along the bypass to serve as possible highway service centre to provide for the reduction of incidents caused by driver fatigue as well as support the economy of the local community. **Response**
- The rezoning of land is outside the scope of this proposal and is recommended to be referred to Warrumbungle Shire Council for their consideration.
- A highway service centre does not form part of the proposal. TfNSW does not identify sites for private development, however any private development application submitted via Warrumbungle Shire Council for a highway service centre would be assessed by TfNSW based on its merits.

## 2.10 Hydrology and flooding

### **Submission number(s)**

12, 13

### **Issue description**

- Concerns over water potentially pooling near new internal property culvert access
- Affected property owner is concerned over the potential flooding impacts from the proposal on planned property works.

### **Response**

- The proposal includes appropriate drainage features to direct water away to the nearest watercourse. This includes longitudinal drainage that could include swales.  
Approaches to drainage water around property access points would be discussed further with property owners during the detailed design stage.
- The proposed construction works have been assessed to potentially increase localised flooding and may flood construction sites during major flood events. No existing dwellings or infrastructure are expected to be adversely impacted by flooding as result of the proposal, however some pasture / grazing land or land along riparian creek corridors may experience increased localised water levels during flood events.

Management measures to minimise impacts of flooding are discussed in the REF, including the implementation of a construction flood management plan. The optimisation of the drainage design would be further discussed during the detailed design stage, as well as the consideration of a further hydrology assessment, depending on the change in any constraints.

## 2.11 Traffic and transport

### **Submission number(s)**

3, 4, 7, 13, 17, 19, 20, 21, 23, 26

### **Issue description**

- Suggestion that the bypass has a consistent speed limit of between 80 and 100 kilometres per hour, then at the southern and northern intersections, increases to 110 kilometres per hour on the highway. Intersections on the bypass should be 80 kilometres per hour.
- Speed limit signage is needed on the bypass.
- Traffic numbers along Purlewaugh Road need to be re-modelled, as with the opening of the Ulamabri silos, there has been an increase in traffic volumes from the 2019 traffic counts. The counts were also done during a period of drought which may not have been an accurate reflection of traffic numbers.
- Does the highway bypass allow for use by pedestrians, cyclists and horse riders? Can the bypass be used as part of a new riding loop around Coona?
- Concerns around active transport user safety at River Road - a pathway and underpass should be included to avoid interacting with highway traffic.
- Active transport users' safety concerns around Purlewaugh Road intersection. Particularly due to the location of the underpass on the southern side of the intersection.

### **Response**

- The bypass (highway main carriageway) would be posted at 110 kilometres per hour. This is consistent with other sections of the Newell Highway. The proposal has been designed in consideration of this proposed posted speed limit and complies with Austroads and TfNSW standards.

The River Road and Purlewaugh Road intersections have a speed limit of 100 kilometres per hour. The proposed intersections would meet road design standards for turning movements at those speeds and have been designed to cater for the anticipated vehicle types and numbers.

- Appropriate speed limit signage would be installed on the bypass. This will also be installed for the local roads at the intersection locations.
- Further traffic investigations would be undertaken during the detailed design stage to assess the latest east / west vehicle movements.
- The bypass has been designed in accordance with the relevant standards. The typical cross section of 3.5m wide lanes with 3m wide sealed shoulders is available along the length of the bypass. Cyclists are able to use the sealed shoulders along the bypass. However, pedestrian demand along this route is expected to be very low, as such there is no provision for a separate path.

The bypass will be a public road and conditions will be consistent with the Newell Highway north and south of Coonabarabran, so that if cyclists choose, the sealed shoulders could be used as part of a cyclist route.

- The pedestrian and cyclist demand along River Road is expected to be very low. As such, no provision has been made for a separate path along River Road. This approach is consistent with active transport conditions along the Newell Highway north and south of Coonabarabran.
- Due to expected overall low pedestrian and cyclist demand, provision for dedicated active transport facilities has not been included in the current design at the Purlewaugh Road intersection. This is consistent with active transport conditions along the Newell Highway north and south of Coonabarabran.

Locating the culvert to the north of Purlewaugh Road was previously considered by TfNSW, however this was not feasible due to the existing topography and the proximity of the existing deep gully.

## 2.12 Heritage

### ***Submission number(s)***

22

### ***Issue description***

- Council requests that the Coonabarabran Aboriginal Land Council to be advised of any Indigenous heritage items discovered.
- Council requests that if approval is given to remove the historic Blaze Tree it is proposed to be relocated to an agreed site and protected.

### ***Response***

- As per the mitigation measures detailed in Section 6.8.2 in the REF, the Standard Management Procedure - Unexpected Heritage Items (Roads and Maritime, 2015) would be followed in the event that an unknown or potential Aboriginal object/s, including skeletal remains, are found during construction. TfNSW commits to consultation with the Aboriginal Land Council in the event that this occurs. Construction specification G36 also sets out the requirements the contractor must follow with regards to unexpected Aboriginal heritage finds.
- As per the management measure detailed in Section 6.8.2 of the REF, if impact to the Blaze Tree is unavoidable during construction, an application must be made for the removal of the tree with NSW Land and Property Information (LPI) Survey Services. The relocation and protection of the Blaze Tree would be in compliance of the requirements outlined by the LPI Survey Services as well as consultation with Warrumbungle Shire Council.

## 2.13 Other

### ***Submission number(s)***

1, 5, 8, 14, 16, 21

### ***Issue description***

- Supportive of proposal
- Preference for bypass to target only heavy vehicles, allowing for light vehicles to still pass through town and sustain the local economy.

### ***Response***

- TfNSW acknowledges the support for the proposed highway bypass upgrade.
- The proposed bypass is intended for all vehicles, however it does target the removal of heavy vehicles from travelling through the town of Coonabarabran. The bypass includes the provision of intersection access into town with appropriate exit signage and town promotion signage (refer to Section 6.5.3.2 in the REF). This town signage aims to promote the town and regional markers so travelers are encouraged to enter the town of Coonabarabran. Overall proposal signage has been designed in accordance to Austroads and TfNSW Guidelines.

TfNSW would continue to consult with Warrumbungle Shire Council (refer to environmental management measure SE9 of the REF).

## 3. Changes to the proposal

### 3.1 Southern intersection

#### 3.1.1 Description

A new southern intersection was proposed in the REF to provide an intersection between the existing and new Newell Highway alignments. This intersection would accommodate northbound traffic entering Coonabarabran with a designated turn off lane and posted speed of 70 kilometres per hour. This turn off lane would be along the existing Newell Highway. Southbound traffic leaving town would approach a new skewed T-intersection to the bypass to exit south along the bypass.

After the REF was issued, a design change was proposed for the southern intersection. The updated southern intersection design provided a new turn-off lane from the highway northbound into Coonabarabran. This would also result in the removal of a section of pavement along the existing highway. The T-intersection was also shifted to the north by around 40 metres. A comparison of the REF design and the updated southern intersection is illustrated in Figure 3.1.

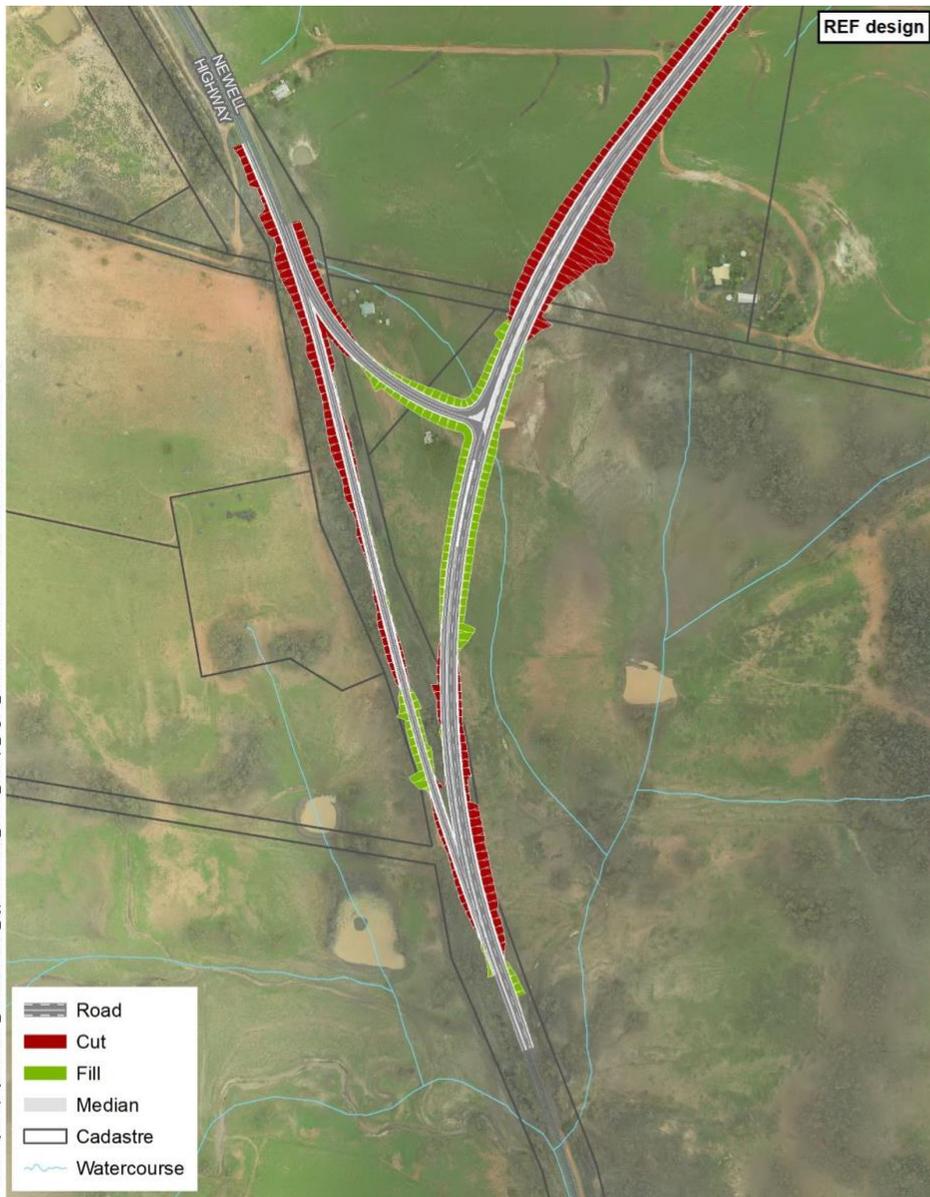
Assessment of the change in the intersection is provided in Section 4.1.

#### 3.1.2 Justification

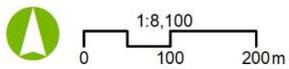
The design change for the southern intersection was proposed to improve driver sight lines for traffic approaching the bypass. The shift in alignment creates a straighter T-intersection with the Newell Highway. This arrangement allows traffic travelling southbound away from Coonabarabran to safely stop at the intersection and provides an improved ability for motorists to judge traffic speed on the highway before they turn onto the highway.

The proposed update to this intersection design was considered by TfNSW, Warrumbungle Shire Council and stakeholders during the value management workshop conducted in December 2019 (RMS 2020). It was agreed that locating the T-intersection further north would allow for a longer intersection queue and would optimise traffic flow at this location.

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Source: Aurecon, LPI



Newell Highway Upgrade Coonabarabran Bypass **REF Submissions Report**

FIGURE 3-1: Southern Intersection

## 3.2 Existing rail line

### 3.2.1 Description

The REF proposed the removal of a section of existing rail line on the eastern side of the intersection of the Newell Highway and River Road. TfNSW is continuing investigations into the management of the railway line in consultation with relevant stakeholders.

Any changes to environmental impacts will be assessed during detailed design.

### 3.2.2 Justification

Further consultation with relevant stakeholders is required regarding the management of the existing railway line.

## 4. Environmental assessment

### 4.1 Southern intersection

An assessment of the design change at the southern intersection is provided in the following sections. A comparison of the REF design and revised design is illustrated in Figure 3-1.

The revised design would result in some changes to the impacts considered in the REF. The potential impacts of the revised design are addressed below.

#### 4.1.1 Biodiversity

The vegetation communities surrounding the southern intersection include:

- PCT 393 – White Box shrubby woodland of the western Liverpool Range, Warrumbungle Range and south-west Pilliga forests, Brigalow Belt South Bioregion
- PCT 417 – Black Cypress Pine – Narrow-leaved Ironbark – red gum +/- White Bloodwood shrubby open forest on hills of the southern Pilliga, Coonabarabran and Garawilla regions, Brigalow Belt South Bioregion
- PCT 434 – White Box grass shrub hill woodland on clay to loam soils on volcanic and sedimentary hills in the southern Brigalow Belt South Bioregion

The threatened ecological community (TEC) associated with PCT 434 are:

- White Box Yellow Box Blakely's Red Gum Woodland, listed as critically endangered under the BC Act
- White Box Yellow Box Blakely's Red Gum Woodland and derived grasslands, listed as critically endangered under the EPBC Act.

These PCT areas are shown in Figure 4.1. Areas in the figure that do not have an associated PCT are planted non-native grasslands.

The majority of the area of the southern intersection is non-native grasslands. The revised intersection design would remove 11.6 ha (compared to 12.1 ha). The revised design of the southern intersection would result in the reduction in clearing of PCT 434, which is a TEC, no change to the removal of PCT 393 and a slight increase in PCT 417. Actual clearing of PCTs are detailed in Table 4-1.

In addition, the changed design would result in a reduction of Hollow Bearing Trees (HBT) and Stag Trees that fall within the proposal area. The revised design has 10 HBT and 4 stag trees in the proposal area (vegetation clearing line) compared to the REF design, which had 20 HBTs and 7 stag trees. However, it is noted that the trees that no longer fall within the vegetation clearing line are still in close proximity which may require their removal. Where practicable, these habitat trees would not be removed and protected on site through the construction period.

As such, the revised impact would have a slight improvement in the vegetation and habitat clearing of the proposal. Overall, the impact of the revised southern intersection to biodiversity as a whole would be consistent with those outlined in the REF. These impacts would be managed through the management measures identified in the REF. No changes to the management measures identified in the REF are required.

Table 4-1 Vegetation clearing comparison

<b>Plant community types</b>	<b>REF design vegetation removal (ha)</b>	<b>Revised design vegetation removal (ha)</b>
PCT 393: White Box shrubby woodland of the western Liverpool Range, Warrumbungle Range and south-west Pilliga forests, Brigalow Belt South Bioregion	0.5	0.5
PCT 417: Black Cypress Pine - Narrow-leaved Ironbark - red gum +/- White Bloodwood shrubby open forest on hills of the southern Pilliga, Coonabarabran and Garawilla regions, Brigalow Belt South Bioregion	0.5	0.3
PCT 434: White Box grass shrub hill woodland on clay to loam soils on volcanic and sedimentary hills in the southern Brigalow Belt South Bioregion	8.08	7.2
<b>Total</b>	<b>9.08</b>	<b>8.0</b>

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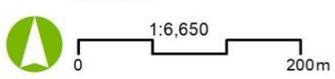
- The design
- - - Vegetation clearing line
- +— Railway
- ~ Watercourse
- 🌳 Hollow bearing trees
- 🌳 Stag trees

Vegetation Community	
<span style="background-color: yellow; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span>	393 - White Box shrubby woodland of the western Liverpool Range, Warrumbungle Range and south-west Pilliga forests, Brigalow Belt South Bioregion
<span style="background-color: cyan; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span>	417 - Black Cypress Pine - Narrow-leaved Ironbark - red gum +/- White Bloodwood shrubby open forest on hills of the southern Pilliga, Coonabarabran and Garwilla regions, Brigalow Belt South Bioregion
<span style="background-color: orange; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span>	434 - White Box grass shrub hill woodland on clay to loam soils on volcanic and sedimentary hills in the southern Brigalow Belt South Bioregion

- Threatened Ecological Communities
- BC Act



Source: Aurecon, LPI



Projection: GDA 1994 MGA Zone 55

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FIGURE 4-1: Vegetation zone

## 4.1.2 Noise and vibration

The revised design of the intersection would move the T-intersection closer to one residence (lot 504 DP753378) by around 40 metres. However, the intersection would still remain over 250 metres away from the residence. This particular property is currently located adjacent to the existing Newell Highway, with relatively high levels of noise from the highway.

Further noise assessment and consideration of the need for noise mitigation would be undertaken during detailed design to determine what and where noise mitigation would be required.

No changes to the management measures identified in the REF are required.

## 4.1.3 Landscape character and visual

The revised intersection design would result in minimal changes to visual impacts. The extent of the intersection along the existing highway would increase, however this in the most part along the existing pavement areas so that there would be negligible visual impacts to surrounding receivers.

The revised design would result in negligible change to the impacts of the landscape character identified in the REF because it is a minor change in relation to the landscape character zones in the study area.

The revised alignment of the T-intersection would move further north by around 40 metres. This realignment would be slightly more visible from the property to the north (lot 504 DP753378), however this residence would still be over 250 metres away.

No changes to the management measures identified in the REF are required.

## 4.1.4 Socio-economic, property and land use

The revised design would alter property and land use impacts, specifically property acquisition. The revised design would change the extent of proposed acquisition for three properties:

- Lot 110 DP 791053: would require a full property acquisition due to the revised design requiring removal of the existing residence.
- Lot 62 DP871914 was identified in the REF to require partial acquisition (1.8 ha) and would have been subject to lease during construction (2.4 ha). For the revised design, this property would have a partial acquisition of 5.05 ha, with no lease. This accounts for TfNSW acquiring a few parcels of the property that would sit between the road into Coonabarabran and the bypass, rather than lease only.
- Lot 113 DP791053: the revised design would not result in any impact to this property, so this property would no longer be subject to a partial acquisition.

It is noted that property acquisition, can result in stress and anxiety regarding property relocation for residents who may be more vulnerable to the economic and other impacts of moving. TfNSW will work together with the property owner regarding the acquisition (REF management measure SE4).

No changes to the management measures identified in the REF are required.

## 4.1.5 Traffic and transport

The revised design would result in positive changes to the traffic and transport impacts of the proposal. These benefits would include improved traffic conditions for vehicles travelling southbound from Coonabarabran to the T-intersection to access the bypass.

A new management measure has been proposed in response to submissions in Chapter 2, for additional traffic investigations and assessment. This would be undertaken across the entire proposal and would capture changes in design including the southern intersection and other changes as a result of the detailed design process.

## 4.1.6 Hydrology and flooding

The revised design is not located within a floodplain and would not result in any changed impacts on or from flooding. Culverts at the southern intersection that are identified in the REF would be designed to match the revised intersection layout so that the existing draining and hydrology behaviours of the overall design are maintained.

No changes to the management measures identified in the REF are required.

## 4.1.7 Climate change and greenhouse gas emissions

The revised design of the southern intersection would not result in any changes to the climate change and greenhouse gas emissions assessment provided in the REF.

No changes to the management measures identified in the REF are required.

## 4.1.8 Other issues

Impacts from the revised design of the southern intersection on other issues identified in the REF are discussed in the following list:

- Surface and groundwater: The revised design of the southern intersection would not result in any changes to surface and groundwater impacts as discussed in the REF.
- Air quality: The revised design of the southern intersection would not result in any changes to air quality impacts as discussed in the REF.
- Waste and resource use: It is noted that the southern intersection with the removal of some existing pavement would be a slight increase in the amount of waste pavement generated. This would be managed as per the management measure WA1, within the waste management plan for construction. No other changes to the waste and resource use of the proposal is anticipated. No changes to the management measures identified in the REF are required.
- Soils and contamination: The revised design of the southern intersection would not result in any changes to soils and contamination impacts as discussed in the REF.
- Aboriginal heritage: The revised design of the southern intersection is adjacent to the AHIMS site 28-2-0033. The intersection is now located further away from the item, however, if the existing pavement of the existing highway is to be removed at this location, then there is still the potential to impact the site. Although site 28-2-0033 could not be found during the field survey, the record is still valid, and protection of the site should be maintained. No changes to the management measures identified in the REF are required.
- Non-Aboriginal heritage: the changed design of the intersection adjacent to the location of the Historic Blaze Tree would be located in the same location and same extent as discussed in the REF. As such,

there is no change to the impact of this item and management measures as identified in the REF would be followed. No changes to the management measures identified in the REF are required.

## 4.2 Errata to the REF: Traffic and transport

In the REF, data from traffic modelling was provided in section 6.5 that identified modelled existing (2018) traffic volumes and future scenarios. However, numbers for a few of the approaches at the Dalgarno Street and Edwards Street intersections in town were found to be not accurate.

The existing data from the REF (for the Newell Highway / Dalgarno Street and Newell Highway / Edwards Street) is shown in Table 4-2. The revised data is shown in Table 4-3.

Table 4-2 AADT traffic volumes across selected town intersections, as presented in the REF

Road	Direction	2018	2026		2036	
			Without proposal	Bypass	Without proposal	Bypass
Newell Highway / Dalgarno Street	NB	2868	2951	2841	2798	2850
	SB	2300	2470	1437	2661	1448
	WB	1307	1220	1119	1319	1181
	EB	2868	2951	2841	2798	2850
Newell Highway / Edwards Street	NB	3272	3394	2419	3711	2481
	SB	3040	3226	2078	3359	2094
	WB	939	885	783	923	791
	EB	957	972	940	961	919

Table 4-3 Revised traffic volumes across selected town intersections

Road	Direction	2018	2026		2036	
			Without proposal	Bypass	Without proposal	Bypass
Newell Highway / Dalgarno Street	NB	<b>2739</b>	<b>2948</b>	<b>2014</b>	<b>3095</b>	<b>2065</b>
	SB	2300	2470	1437	2661	1448
	WB	1307	1220	1119	1319	1181
	EB	<b>2410</b>	<b>2588</b>	<b>1506</b>	<b>2778</b>	<b>1517</b>

Road	Direction	2018	2026		2036	
			Without proposal	Bypass	Without proposal	Bypass
Newell Highway / Edwards Street	NB	3272	3394	2419	3711	2481
	SB	3040	3226	2078	3359	2094
	WB	<b>911</b>	<b>996</b>	783	<b>1100</b>	791
	EB	957	972	940	961	919

As seen in Table 4-3, the introduction of the bypass maintains the overall reduction in traffic forecasted over the next 10 to 20 years. The revision of the traffic data would not change the road safety or disruption to access as detailed in the REF. No further mitigation measures from those identified in the REF are required.

## 5. Environmental management

The REF for the Newell Highway Upgrade at Coonabarabran identified the framework for environmental management, including safeguards and management measures that would be adopted to avoid or reduce environmental impacts (Chapter 7 of the REF).

After consideration of the issues raised in the public submissions and changes to the proposal, the safeguard and management measures have been revised to undertake additional traffic investigations during the detailed design phase.

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

### 5.1 Environmental management plans (or system)

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

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

The CEMP will be prepared prior to construction of the proposal and must be reviewed and certified by the TfNSW Environment Officer prior to the commencement of any on-site works. The CEMP will be a working document, subject to ongoing change and updated as necessary to respond to specific requirements. The CEMP would be developed in accordance with the specifications set out in 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.

### 5.2 Summary of safeguards and management measures

The REF for the Newell Highway Upgrade at Coonabarabran 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 7 of the REF) have been revised. Should the proposal proceed, the environmental management measures in Table 5-1 will guide the subsequent phases of the proposal. Additional and/or modified environmental safeguards and management measures to those presented in the REF have been underlined and deleted measures, or parts of measures, have been struck out.

Table 5-1: Summary of environmental safeguards and management measures

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
GEN1	Minimise environmental impacts during construction	<p>A CEMP will be prepared and submitted for review and endorsement of the Transport for NSW Environment Manager prior to commencement of the activity.</p> <p>As a minimum, the CEMP will address the following:</p> <ul style="list-style-type: none"> <li>• any requirements associated with statutory approvals</li> <li>• details of how the project will implement the identified safeguards outlined in the REF</li> <li>• issue-specific environmental management plans</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 will be implemented during the undertaking of the activity.</p>	TfNSW / Contractor	Detailed design / pre-construction
GEN2	Notification	All businesses, residential properties and other key stakeholders (e.g. schools, local councils) affected by the activity will be notified at least five days prior to commencement of the activity.	TfNSW / Contractor	Pre-construction
GEN3	Environmental awareness	<p>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.</p> <p>Site-specific training will be provided to personnel engaged in activities or areas of higher risk. These include:</p> <ul style="list-style-type: none"> <li>• threatened species habitat</li> </ul>	TfNSW / Contractor	Detailed design / pre-construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		<ul style="list-style-type: none"> <li>adjoining residential areas requiring particular noise management measures</li> </ul>		
GEN4	Utilities	<p>Prior to the commencement of works:</p> <ul style="list-style-type: none"> <li>the location of existing utilities and relocation details will be confirmed following consultation with the affected utility owners</li> <li>if the scope or location of proposed utility relocation works falls outside of the assessed proposal scope and footprint, further assessment will be undertaken</li> </ul>	Contractor	Detailed design / pre-construction
Bi1	Native vegetation removal	<p>Native vegetation removal will be minimised through detailed design and construction.</p> <ul style="list-style-type: none"> <li>Vegetation clearing during construction would only be undertaken within the proposed construction boundary as detailed in Figures 6.1-6.8 of the REF.</li> </ul>	TfNSW / Contractor	Detailed design
Bi2		<p>Pre-clearing surveys will be undertaken in accordance with Guide 1: Pre-clearing process of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011). Particular care should be taken to survey for the following:</p> <ul style="list-style-type: none"> <li>Austral Toadflax</li> <li>Bluegrass</li> <li>Commersonia procumbens</li> <li>Finger Panic Grass</li> <li>Greenhood Orchid</li> <li>Large-leafed Monotaxis</li> <li>Native Milkwort</li> <li>Philothea ericifolia</li> <li>Pine Donkey Orchid</li> <li>Scant Pomaderris</li> <li>Silky Swainson-pea</li> <li>Tylophora linearis</li> </ul>	Contractor	Pre-construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		Additionally, the patch of PCT 417 on Lot/Section/DP 3/-/DP828357, which was unable to be accessed during the second field survey due to landowner concerns regarding Covid-19, should be more thoroughly surveyed for the presence of hollow-bearing habitat trees.		
Bi3		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).	Contractor	Pre-construction
Bi4		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).  Specifically, strategic habitat restoration will occur within the impact footprint, particularly around wildlife connectivity measures, with a view to both developing vegetation links / corridors, enhancing existing linkages and connecting isolated areas of native vegetation.	Contractor	Construction / post construction
Bi5		Translocate soil and leaf litter from areas to be cleared to degraded areas in the proposal area with better quality Box-Gum Woodland PCTs prioritised.	Contractor	Pre-construction / post construction
Bi6		Appoint a commercial plant propagator to collect and grow on plant material for revegetation, particularly within CEEC areas.	Contractor	Pre-construction
Bi7		Investigation of possible inclusion of more readily propagatable species such as Silky Swainson-pea, Bluegrass, Finger Panic Grass and Tylophora linearis in revegetation plantings.	Contractor	Post construction
Bi8		The unexpected species find procedure is to be followed under Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) if threatened ecological communities, not assessed in the biodiversity assessment, are identified in the proposal site.	Contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
Bi9	Removal of threatened species, habitat and habitat features	Habitat removal will be minimised through detailed assessment of habitat values of trees in conjunction with road safety requirements.	TfNSW	Pre-construction
Bi10		The proposal will aim to relocate the viable local population of Diamond Firetail ( <i>Stagonopleura guttata</i> ) in the development footprint into vacant habitat on an area managed in perpetuity for conservation. This will be undertaken in accordance with the NSW DPIE Translocation Operational Policy May 2019.	Contractor	Construction
Bi11		<p>Habitat 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).</p> <p>This would include:</p> <ul style="list-style-type: none"> <li>• Timing vegetation clearing works to occur during the late autumn and/or winter months, outside of the peak times of critical life cycle events for threatened species, where practical and feasible as per the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011).</li> <li>• Conducting a pre-clearing process before clearing begins</li> <li>• Removing habitat in stages</li> <li>• Engaging an ecologist / spotter catcher to be present during habitat removal</li> <li>• Felling habitat carefully</li> </ul> <p>Developing an unexpected threatened species finds procedure</p>	Contractor	Construction
Bi12		Habitat will be replaced or re-instated in accordance with Guide 5: Re-use of woody debris and bushrock.	TfNSW	Post construction
Bi13		Engage an ecologist to develop a nest box strategy in accordance with Guide 8: Nest boxes of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) considering the following:	TfNSW	Post construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		<ul style="list-style-type: none"> <li>The target species</li> <li>The tree hollow preferences of native hollow-dependant fauna known or likely to occur in the locality</li> <li>The sizes, types and quantities of potential tree hollows to be removed</li> <li>The sizes, types and quantities of tree hollows existing in adjacent areas</li> <li>The design, materials and quantity of nest boxes required</li> <li>Whether the nest boxes are required to fill a short term gap in the availability of hollows (e.g. during construction) or to compensate for the long term reduced availability of hollows</li> <li>Monitoring and maintenance of the nest boxes</li> </ul> <p>Habitat boxes and / or artificial hollows should be installed prior to the removal of hollow-bearing trees.</p>		
Bi14		The unexpected species find procedure is to be followed under Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) if threatened flora or fauna, not assessed in the biodiversity assessment, are identified in the proposal site.	Contractor	Construction
Bi15		Familiarising staff regarding the threatened species and communities that occur on site i.e. through toolbox talks etc.	TfNSW	Pre-construction
Bi16	Fragmentation of identified habitat corridors	Identifying linkages and likely corridors important to the local movement of native species at the planning stage of the proposal.	Contractor	Detailed design
Bi17		<p>Connectivity measures will be implemented in accordance with the Wildlife Connectivity Guidelines for Road Projects (RTA, 2011).</p> <p>This will include:</p> <ul style="list-style-type: none"> <li>Installing large culverts with natural substrates suitable for bats, invertebrates, macropods, reptiles and small-medium sized animals at locations where large wooded patches have been</li> </ul>	Contractor	Detailed design, construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		<p>transected and where suitable topography allows. The exact number and substrate of culverts will be considered during detailed design</p> <ul style="list-style-type: none"> <li>Installing canopy bridges with avian predator guards and shelter for arboreal mammals including possums and Squirrel Glider at several strategic locations where large wooded patches will be transected i.e. adjacent to Purlewaugh Road and between remnant patches of PCT 379. The exact number of canopy bridges is to be determined during the development of a detailed wildlife connectivity strategy</li> <li>Developing management plans for each fauna species that require targeted connectivity measures, including the Squirrel Glider and Eastern Pygmy Possum. As per the Spotted-tailed Quoll Management Plan for the Pacific Highway (TfNSW, 2017), the management plans will include performance indicators and a robust adaptive management strategy / monitoring program to gauge the effectiveness of the connectivity measures.</li> </ul> <p>Regular inspection and monitoring of wildlife connectivity measures will be considered during detailed design to make sure they remain safe for motorists and functional for wildlife and to determine if the connectivity goal(s) of the project have been met.</p>		
Bi18		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	Pre-construction, construction
Bi19	Edge effects on adjacent native vegetation and habitat	Fauna will be managed in accordance with Guide 9: Fauna handling of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011).	Contractor	Pre-construction, construction
Bi20	Injury and mortality of fauna	Install wildlife signage at strategic locations to increase driver awareness of fauna within the local area.	TfNSW	Post construction
Bi21		Conduct site inspections for fauna (e.g. sheltering under vehicles) prior to the daily commencement of works	Contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
Bi22	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	Pre-construction, construction
Bi23		Clean machinery, vehicles and footwear before moving to a new location. Machinery must be clean of all mud, soil and vegetation material.	Contractor	Construction
Bi24	Invasion and spread of pests	Working areas are to be maintained, kept free of rubbish and cleaned up regularly.	Contractor	Construction
Bi25	Invasion & spread of pathogens and disease	Pathogens will be managed in accordance with Guide 2: Exclusion zones of the Biodiversity Guidelines: Protecting and Bi managing biodiversity on RTA projects (RTA, 2011).	Contractor	Construction
Bi26	Noise, light and vibration	Shading and artificial light impacts will be minimised through detailed design, including limiting lighting to intersections, adhering to the Dark Sky guidelines and reducing unnecessary light sources.	Contractor	Detailed design
Bi27	Aquatic habitats	Avoid activities in aquatic habitats and riparian zones as much as practicable.	Contractor	Construction
Bi28		The sensitivity of aquatic habitats and riparian zones and the measures in place to protect them should be regularly communicated to all staff e.g. during inductions and toolbox talks.	Contractor	Construction
Bi29		Protect aquatic habitats and riparian zones where works are not required with exclusion zones. Exclusion fencing should be used outside sensitive areas.	Contractor	Construction
Bi30		The location of aquatic habitat features within or adjacent to the footprint should be clearly identified on environmental management plans.	Contractor	Pre-construction construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
Bi31		Access the waterway so that riparian vegetation removal is minimised and restricted to the minimum amount of bank length required for the construction activity.	Contractor	Construction
Bi32		Keep vehicles and machinery away from the banks of a waterway where possible.	Contractor	Construction
Bi33		Refuelling of vehicles and plant, and chemical storage and decanting should not take place within 50 metres of aquatic habitats.	Contractor	Construction
Bi34		Avoid clearing within the riparian zone during periods when flooding is likely to occur.	Contractor	Construction
Bi35		Ensure that any clearing undertaken does not allow the vegetation/trees to fall into the waterway.	Contractor	Construction
Bi36		Retain the roots of trees on the bank of a waterway in order to maintain bank stability.	Contractor	Construction
Bi37		DPI (Fisheries) must be consulted before works commence where snags require lopping, realignment, relocation and/or removal.	Contractor	Pre-construction, construction
Bi38		During rehabilitation, stabilise the banks of the waterway through revegetation and/or armouring according to available landscape plans.	Contractor	Post construction
Bi39		Maintain fish passage as far as practical during construction of the bridge over the Castlereagh River.	Contractor	Construction
Bi40		Remove all temporary works, flow diversion barriers and sediment control barriers within aquatic habitats as soon as practicable and in a manner that does not promote future channel erosion.	Contractor	Construction
Bi41		Engage an ecologist / spotter catcher to conduct a pre-clearance survey prior to the dewatering of farm dams and ensure an ecologist / spotter catcher is on call during the dewatering process to safely relocate any fauna that may be present.	Contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
NV1	Noise and vibration	<p>A Construction Noise and Vibration Management Plan will be prepared before any works begin and would include:</p> <ul style="list-style-type: none"> <li>• Identification of nearby sensitive receivers</li> <li>• Description of works, construction equipment and hours works would be completed in</li> <li>• Criteria for the proposal and relevant licence and approval conditions</li> <li>• Requirements for noise and vibration monitoring</li> <li>• Details of how community consultation would be completed</li> <li>• Procedures for handling complaints</li> <li>• Details on how respite would be applied</li> <li>• The NVMP will include standard management measure from the Construction Noise and Vibration Guideline (CVNG) (Roads and Maritime, 2016b)</li> </ul>	Contractor	Detailed design / pre-construction
NV2	Construction noise and vibration assessments	<p>Location and activity specific noise and vibration impact assessments should be carried out prior to (as a minimum) activities:</p> <ul style="list-style-type: none"> <li>• With the potential to result in noise levels above 75 dBA at any receiver</li> <li>• Required outside Standard Construction Hours likely to result in noise levels in greater than the relevant Noise Management Levels</li> </ul> <p>With the potential to exceed relevant criteria for vibration. The assessments should confirm the predicted impacts at the relevant receivers in the vicinity of the activities to aid the selection of appropriate management measures, consistent with the requirements of the CNVG.</p>	Contractor	Construction
NV3	Construction noise exceedances	<p>The assessment has identified that high impacts are likely when noise intensive equipment such as rockbreakers or concrete saws are in use, especially during evening and night-time periods. The nearest residential receivers are predicted to have 'high' impacts during the evening and night-time when the noisiest construction works are nearby.</p> <p>Where noise intensive equipment is to be used near sensitive receivers, the works should be scheduled for Standard Construction Hours, where possible. If it is not possible to restrict the works to the daytime then they should be completed as early as possible in each work shift.</p>	Contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		Appropriate respite should also be provided to affected receivers in accordance with the CNVG and/or the proposal's conditions of approval.		
NV4	Compounds with long term works	Hoarding, or other shielding structures, should be used where receivers are impacted near compounds or fixed works areas with long durations. To provide effective noise mitigation, the barriers should break line of sight from the nearest receivers to the works and be of solid construction with minimal gaps.	Contractor	Pre-construction
NV5	Construction noise monitoring	Monitoring should be carried out at the start of new noise and vibration intensive activities to confirm that actual levels are consistent with the predictions and that appropriate mitigation measures from the CNVG have been implemented.	Contractor	Construction
NV6	Construction vibration	Where works are within the cosmetic damage minimum working distances and considered likely to exceed the criteria: <ul style="list-style-type: none"> <li>different construction methods with lower source vibration levels should be investigated and implemented, where feasible</li> <li>attended vibration measurements should be undertaken at the start of the works to determine actual vibration levels at the item. Works should be ceased if the monitoring indicates vibration levels are likely to, or do, exceed the relevant criteria.</li> </ul>	Contractor	Construction
NV7	Compounds with long term works	Certain receivers in the study area are within the human comfort minimum working distance and occupants of affected buildings may be able to perceive vibration impacts when vibration intensive equipment is in use.  The potential human comfort impacts and requirement for vibration intensive works should be reviewed as the proposal progresses.	Contractor	Construction
NV8	Construction vibration	Building condition surveys should be completed before and after the works where buildings or structures are within the minimum working distances and considered likely to exceed the cosmetic damage criteria during the use of vibration intensive equipment.	Contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
NV9	Construction traffic	Further consideration of the potential impacts from construction traffic should be completed when the final haulage routes are known.	Contractor	Pre-construction / construction
NV10	Operational noise mitigation	Operational noise mitigation requirements will be reviewed during detailed design. At-property treatments will be agreed upon and implemented during construction in consultation with property owners.	TfNSW / Contractor	Detailed design / construction
NV11	Operational noise	Post construction noise monitoring will be undertaken in accordance with <i>Noise Criteria Guideline</i> (Roads and Maritime, 2015) and <i>Noise Mitigation Guideline</i> (Roads and Maritime, 2015) within two to twelve months of proposal completion, at selected representative locations along the proposal route.	TfNSW	Operation
L1	General	<p>An Urban Design and Landscape Plan (UDLP) will be prepared to support the final detailed design and implemented as part of the CEMP. The UDLP will present an integrated urban design for the proposal, providing practical detail on the application of design principles and objectives identified in the environmental assessment.</p> <p>The UDLP will include:</p> <ul style="list-style-type: none"> <li>• Proposed revegetation plan that will include: <ul style="list-style-type: none"> <li>– species to be used</li> <li>– procedures for monitoring and maintaining landscaped or rehabilitated areas</li> </ul> </li> <li>• Design treatments for: <ul style="list-style-type: none"> <li>– built elements including retaining walls and the bridge</li> <li>– pedestrian and cyclist elements including shared use path locations, paving types and pedestrian crossings</li> <li>– fixtures such as lighting, fencing and signs</li> </ul> </li> <li>• Details of the staging of landscape works taking account of related environmental controls such as erosion and sedimentation controls and drainage</li> </ul>	Contractor	Detailed design / pre-construction / construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		<p>The UDLP will be prepared in accordance with relevant guidelines, including:</p> <ul style="list-style-type: none"> <li>• Beyond the Pavement (2014) urban design policy, process and principles</li> <li>• TfNSW Landscape Guideline (Roads and Maritime, 2018c)</li> <li>• Newell Highway Urban Design Framework (Roads and Maritime, 2018e)</li> <li>• Signage in accordance with Council and the TfNSW Bypassed Town signage initiative (2018a)</li> </ul>		
L2	Lighting	<p>Lighting, including construction lighting, will be designed in accordance with the Dark Sky Planning Guideline (DPE, 2006) and in consultation with Siding Spring Observatory.</p> <p>If requirements in the guideline cannot be met (e.g. during night construction works) the contractor will consult with the Siding Spring Observatory before undertaking the light emitting activity.</p>	Contractor	Pre-construction/ construction
L3	Signage	Provide clear wayfinding signage for visitors to Coonabarabran including signage in accordance with the TfNSW Bypassed Town signage initiative.	TfNSW	Pre-construction/ construction
L4	Construction visual impacts	<p>The layout of ancillary facility sites will be designed to limit impact. The design will would consider:</p> <ul style="list-style-type: none"> <li>• screening of boundaries facing sensitive receivers or views</li> <li>• careful placement of structures and buildings to maintain viewpoints or provide additional screening of site activities.</li> </ul>	Contractor	Pre-construction/ construction
L5	Construction visual impacts	Ancillary facilities will be maintained, kept tidy and well-presented including sorting regular removal of excess materials to reduce visual impact.	Contractor	Construction
L6	Construction visual impacts	Ancillary facility sites and temporary construction areas will be progressively restored to at least their pre-construction conditions when no longer required.	Contractor	Construction
L7	Tree management and removal	Any tree removal or pruning will be undertaken by a qualified specialist and in accordance with AS4970: 2009: Protection of Trees on Development Sites (Standards Australia, 2009) and	Contractor	Pre-construction construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		AS4373:2007: Pruning of Amenity Trees and WorkCover Amenity Tree Industry Code of Practice 1998.		
SE1	Community consultation	<p>A Communication Plan (CP) would be prepared and implemented as part of the CEMP to help provide timely and accurate information to the community during construction. The CP would include (as a minimum):</p> <ul style="list-style-type: none"> <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 complaints.</li> <li>• The CP would be prepared in accordance with the Community Involvement and Communications Resource Manual (RTA, 2008).</li> </ul>	TfNSW	Pre-construction
SE2	Changes in demography and population	<p>The use of a mix of accommodation facilities for the temporary construction workforce should be considered to reduce pressure on facilities.</p> <p>Consultation with the Warrumbungle Shire Council should occur to understand the various accommodation options available.</p>	TfNSW / Construction contractor	Pre-construction / construction
SE3	Property	TfNSW will continue to consult with affected property owners and land occupiers until the completion of the proposal. Discussions including the nature and timing of construction works would be required to identify relevant mitigation measures for noise, traffic and visual impacts.	TfNSW	Pre-construction/ construction
SE4	Property acquisition	Land acquisition will occur in accordance with the Land Acquisition (Just Terms Compensation) Act 1991.	TfNSW	Pre-construction
SE5	Property severance	<p>TfNSW would consider each owner's remaining holdings accounting for the impacts of severance and/or the residual functional use of any remaining land.</p> <p>TfNSW would engage an appropriately qualified property and/or agricultural specialist to assess these impacts and to identify alternative opportunities for their remaining holdings.</p>	TfNSW	Pre-construction / operation

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		TfNSW would manage any residual land in accordance with its disposal processes. This would involve considering landowner requests for land swaps.		
SE6	Changes in access	Temporary and permanent changes in access will be discussed with impacted land occupiers prior to commencement of construction and during construction activities should arrangements change.  TfNSW would confirm any realignment of street access or inter-property access under the proposal, in consultation with property owners.	TfNSW / Contractor	Pre-construction/ construction
SE7	Freight and agricultural access routes	TfNSW will consult with freight and agricultural industries to identify critical times during the year where access reliability is critical on the Newell Highway.  Road Occupancy Licences for the highway and with the local roads impacted by the proposal would be obtained. Temporary access tracks will be designed to similar conditions of existing roads to allow for use by the same sort of traffic.	TfNSW	Pre-construction/ construction
SE8	Social infrastructure	Communication and consultation with facilities near to the proposed construction works including the golf course, hospital and Cooina Aged Care Centre so that potential impacts are managed. This includes maintaining access along Purlawaugh Road and noise mitigation.	Contractor	Pre-construction / construction
SE9	Loss of passing trade	TfNSW would work with Warrumbungle Shire Council and to maintain communication with businesses who may be impacted by the proposal and ensure ongoing concerns are considered.	TfNSW	Construction / operation
SE10	Community values and local amenity	During construction of the proposal, vegetation removal will occur only in areas identified in the REF and biodiversity assessment report for the proposal. Other natural areas will be protected where possible to maintain the landscape and amenity of the surrounding area	TfNSW	Construction
SE11	Initiatives	TfNSW will continue to work together with the Warrumbungle Shire Council to develop initiatives and strategies such as town signage and entry statements.	TfNSW	Detailed design / Pre-construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
SE12	Planning for construction pressures	TfNSW will work with Warrumbungle Shire Council through the construction period to try and minimise impacts during town events, such as StarFest to minimise any adverse impacts on the community and businesses.	TfNSW	Pre-construction / Construction
SE13	Planning for construction pressures – events	TfNSW will work with Warrumbungle Shire Council through the construction period to try and minimise impacts during town events, such as StarFest to minimise any adverse impacts on the community and businesses	TfNSW	Pre-construction
SE14	Business and tourism impacts	Proposal to be designed to meet the guidelines of the Dark Sky Planning Guidelines	TfNSW	Pre-construction and construction
TT1	Traffic and transport	<p>A Traffic Management Plan (TMP) will be prepared and implemented as part of the CEMP. The TMP will be prepared in accordance with the Roads and Maritime Traffic Control at Work Sites Manual (Roads and Maritime, 2018d) and QA Specification G10 Control of Traffic (Roads and Maritime, 2019e). The TMP will 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 (including signage) to manage and regulate traffic movement</li> <li>• measures to maintain 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>	Contractor	Detailed design  Pre-construction  Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
TT2	Ancillary facilities	The ancillary facilities would be securely fenced with temporary fencing. Signage would be erected advising the general public of access restrictions. Upon completion of the construction works, the temporary ancillary facilities, work area and stockpiles would be removed, the site cleared of all rubbish and materials and rehabilitated to the landowner's requirements.	Contractor	Pre-construction
TT3	Construction vehicle parking	Construction vehicles, personnel vehicles and plant would be stored within the designated ancillary facilities or in designated areas within the construction site. Vehicle parking needs to follow the Traffic Control at Worksites Technical Manual (Roads and Maritime 2018d).	Contractor	Pre-construction
TT4	Coach/bus routes	Coach/bus route operators, including school bus operators, would be notified of the proposed works and potential route impacts prior to works commencing.	TfNSW	Pre-construction Construction
TT5	Property access	Access to private properties would be maintained during construction, wherever possible. Where changes to access arrangements or disruption to access are necessary, owners and occupiers would be consulted regarding alternative access arrangements in accordance with the relevant community consultation processes outlined in the TMP.	Contractor	Construction
TT6	Community notification	TfNSW will consult with the general community regarding changed traffic conditions and will consult with emergency services.	TfNSW	Construction
TT7	Active transport	TfNSW should consider the road safety implications of cyclists using the highway at the River Road and Purlewaugh Road split-intersections and whether any safety features such as signage or crossing points need to be incorporated into the proposal.	TfNSW	Detailed design
TT8	Traffic modelling	During the detailed design phase of the proposal, further traffic investigations would be undertaken across the project to capture changes in traffic movement and vehicles types.	TfNSW/ Contractor	Detailed design
HF1	Flooding	Further design and optimisation of the drainage design will be undertaken. Further flood modelling will be undertaken during later design stages to limit any afflux increases.	Contractor	Detailed design

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
HF2	Ancillary facilities	Further consideration will be undertaken for flooding impacts in relation to ancillary facilities	Contractor	Detailed design
HF3	Flooding	<p>A construction flood management plan will be prepared as part of the CEMP to set out processes for monitoring and managing flood risk. The plan will:</p> <ul style="list-style-type: none"> <li>Specify the steps taken in the event of a flood warning</li> <li>Including removal or securing of loose materials, equipment, fuels and chemicals</li> <li>Procedures for creek diversions, if required.</li> </ul>	Contractor	Pre-construction
CI1	Greenhouse gas emissions	<p>The procurement strategy developed for the construction phase will demonstrate value for money and consideration for opportunities to procure goods and services:</p> <ul style="list-style-type: none"> <li>from local suppliers, if available</li> <li>that are energy efficient or have low embodied energy</li> <li>that minimise the generation of waste</li> <li>that make use of recycled materials.</li> </ul>	Contractor	Pre-construction/ construction
CI2	Greenhouse gas emissions	The detailed design and construction planning will demonstrate that the extent of vegetation clearing within the proposal area has been minimised.	Contractor	Detailed design
CI3	Greenhouse gas emissions	Construction equipment, plant and vehicles will be appropriately sized for the task, serviced frequently and will not be left idling when not in use.	Contractor	Construction
WQ1	Surface and groundwater	<p>A Soil and Water Management Plan (SWMP) will be prepared and implemented as part of the CEMP. The SWMP will identify all reasonably foreseeable risks relating to soil erosion and surface water and groundwater pollution and describe how these risks will be addressed during construction.</p> <p>The SWMP will include:</p>	Contractor	Detailed design / Pre-construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		<ul style="list-style-type: none"> <li>• a water quality monitoring program will be developed and implemented in accordance with Guideline for Construction Water Quality Monitoring (RTA, 2003). The monitoring program is to include:</li> <li>• visual monitoring of local water quality (including for turbid plumes and hydrocarbon spills or slicks)</li> <li>• monthly up and down stream water quality monitoring during construction in and over the Castlereagh River.</li> <li>• site-specific discharge criteria for construction phase surface water discharges. Construction phase monitoring parameters should be determined based on the results of the pre-construction monitoring. Sampling parameters and frequency should adhere to the recommendations provided in the Guideline for Construction Water Quality Monitoring (RTA, 2003).</li> <li>• baseline conditions (groundwater level and quality) will be established for shallow groundwaters prior to construction</li> <li>• arrangements for managing pollution risks associated with spillage or contamination on the site and adjoining areas and monitoring during and post-construction</li> <li>• measures for the protection of surface and ground water resources</li> </ul>		
WQ 2	Surface and groundwater	<p>Progressive Erosion and Sediment Control Plans (PESCPs) will be developed and implemented at each construction stage as a part of the Soil and Water Management Plan.</p> <p>The plans would include arrangements for managing wet weather events, including monitoring potential high risk events (such as storms) and specific controls and follow up measures to be applied in the event of wet weather.</p> <p>It will be based upon the preliminary erosion and sedimentation management report (ESMR) prepared as part of the REF.</p>	Contractor	Detailed design / Pre-construction
WQ 3	Surface water	Water flows should be maintained at all times during construction, where possible, along the Castlereagh River.	Contractor	Detailed design / Pre-construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
WQ 4	Water quality	<p>A Spill Management Plan will be prepared and implemented as part of the CEMP to minimise the risk of pollution arising from spillage or contamination on the site and adjoining areas. It will be in accordance with the Roads and Maritime Code of Practice for Water Management (RTA, 1999) and relevant EPA guidelines.</p> <p>The Spill Management Plan will address, but not necessarily be limited to:</p> <ul style="list-style-type: none"> <li>• management of chemicals and potentially polluting materials</li> <li>• any bunding requirements</li> <li>• maintenance of plant and equipment</li> <li>• emergency management, including notification, response and clean-up procedures.</li> <li>• showing the location of emergency spill kits.</li> </ul>	Contractor	Detailed design / Pre-construction
WQ 5	Surface and groundwater	<p>The rehabilitation of disturbed areas will be undertaken progressively as construction stages are completed, and in accordance with:</p> <ul style="list-style-type: none"> <li>• Landcom's Managing Urban Stormwater: Soils and Construction series</li> <li>• RTA Landscape Guideline</li> <li>• Roads and Maritime Guideline for Batter Stabilisation using Vegetation (2015).</li> </ul>	Contractor	Pre-construction/ construction
WQ 6	Water quality	<p>Operational water quality treatment and quantity will be identified during detailed design in consideration of the Roads and Maritime Water Sensitive Urban Design Guidelines (2017). Design considerations will include:</p> <p>Permanent water quality basins and / or swales</p> <ul style="list-style-type: none"> <li>• spill containment of a minimum of 20,000 litres to be provided to capture spills on the Castlereagh River bridge and approaches scour protection on bridge abutments including rock armouring</li> <li>• scour protection for permanent water quality basins, areas of ground improvement works / embankments within or adjacent to watercourses.</li> <li>• design measures to maintain hydrological regimes.</li> </ul>	Contractor	Detailed design

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		If deemed necessary, based on the results of the construction phase monitoring, a surface water quality monitoring schedule for the first year of the operational phase of the Coonabarabran Bypass should be established. A monitoring program should be implemented if analysis of any of the site specific key parameters, selected based on the pre-construction monitoring, are found to increase during the construction phase, between the upstream and downstream monitoring locations.		
WQ 7	Groundwater quality	Groundwater levels and quality are to be monitored periodically throughout the operation of the bypass to monitor potential impacts from operations on groundwater resources.	TfNSW	Operation
AQ1	Air quality	<p>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:</p> <ul style="list-style-type: none"> <li>• potential sources of air pollution</li> <li>• air quality management objectives consistent with any relevant published EPA and/or OEH guidelines</li> <li>• mitigation and suppression measures to be implemented</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	Detailed design / Pre-construction
WA1	Waste management	<p>A Waste Management Plan (WMP) will be prepared and implemented as part of the CEMP. The WMP will 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 (re-use, recycle, stockpile, disposal)</li> <li>• statutory approvals required for managing both on and off-site waste, or application of any relevant resource recovery exemptions</li> <li>• procedures for storage, transport and disposal</li> <li>• monitoring, record keeping and reporting.</li> </ul>	Contractor	Detailed design / Pre-construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		The WMP will be prepared taking into account the <i>Environmental Procedure - Management of Wastes on Roads and Maritime Services Land</i> (Roads and Maritime, 2014) and relevant TfNSW Waste Fact Sheets.		
WA2	Waste management	Resource management hierarchy principles are to be followed: <ul style="list-style-type: none"> <li>• avoid unnecessary resource consumption as a priority</li> <li>• avoidance is followed by resource recovery (including reuse of materials, reprocessing, recycling and energy recovery)</li> <li>• disposal is undertaken as a last resort (in accordance with the Waste Avoidance &amp; Resource Recovery Act 2001).</li> </ul>	Contractor	Detailed design / Pre-construction / Construction
WA3	Waste management	If vegetation is to be mulched and transported off site for beneficial reuse, it is to be assessed for the presence of weeds, pest, and other disease and a Mulch Management Plan prepared in accordance with the <i>Roads and Maritime Technical Procedure: Mulch Management</i>	Contacto	Pre-construction / Construction
WA4	Waste management	Recycling facilities will be provided at site compounds for recycling paper, plastic, glass and other re-useable materials. Liquid wastes, such as paints and solvents, will be disposed of in accordance with the <i>Waste Classification Guidelines Part 1: Classifying Waste</i> (DECCW, 2009) and the POEO Act 1997.	Contacto	Pre-construction / Construction
AH1	Aboriginal heritage	An Aboriginal Heritage Management Plan (AHMP) will be prepared in accordance with the Procedure for Aboriginal cultural heritage consultation and investigation (PACHCI, Roads and Maritime, 2012) and Standard Management Procedure – Unexpected Heritage Items (Roads and Maritime, 2015) and implemented as part of the CEMP. The AHMP will: <ul style="list-style-type: none"> <li>• document the location of Aboriginal heritage sites 28-2-0197 and 28-2-0033 and provide a fenced ‘no-go zone’ along the construction boundary to ensure the site is not inadvertently impacted (at least 10 metres from each site)</li> <li>• provide specific guidance on measures and controls to be implemented for managing impacts on Aboriginal heritage</li> </ul>	Contractor	Pre-construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		The AHMP will be prepared in consultation with all relevant Aboriginal groups.		
AH2	Aboriginal heritage	<p>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, are found during construction. This applies where TfNSW does not have approval to disturb the object/s or where a specific safeguard for managing the disturbance (apart from the Procedure) is not in place.</p> <p>Work will only re-commence once the requirements of that Procedure have been satisfied.</p>	Contractor	Construction
AH3	Aboriginal heritage	<p>Inductions will be provided to all construction personnel including:</p> <ul style="list-style-type: none"> <li>the location of the Aboriginal heritage sites 28-2-0197 and 28-2-0033, their 'no-go zones' and their legislative protection under the NPW Act</li> <li>the identification of Aboriginal objects within the local region, with particular emphasis placed upon stone artefact identification (refer to Appendix K).</li> </ul>	Contractor	Pre-construction / construction
HH4	Non-Aboriginal heritage	No impact to the blaze tree is permitted unless approved under the <i>Surveying and Spatial Information Act 2002</i> . If impact to the tree is unavoidable, an application must be made for the removal of the tree with NSW Land and Property Information (LPI) Survey Services.	TfNSW	Pre-construction
SC1	Soils and contamination	<p>A Contaminated Land Management Plan will be prepared in accordance with the <i>Guideline for the Management of Contamination</i> (Roads and Maritime, 2013) and implemented as part of the CEMP. The plan will include, but not be limited to:</p> <ul style="list-style-type: none"> <li>capture and management of any surface runoff contaminated by exposure to the contaminated land</li> <li>management of the remediation and subsequent validation of the contaminated land, including any certification required</li> <li>measures to ensure the safety of site personnel and local communities during construction.</li> </ul>	Contractor	Detailed design / Pre-construction
SC2	Soils and contamination	If contaminated areas are encountered during construction, appropriate control measures will be implemented to manage the immediate risks of contamination. All other works that may impact on	Contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		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 TfNSW Environment Manager and/or EPA.		
SC3	Soils and contamination	A site-specific emergency spill plan will be developed and include spill management measures in accordance with the TfNSW Code of Practice for Water Management (RTA, 1999) and relevant EPA guidelines. The plan will address measures to be implemented in the event of a spill, including initial response and containment, notification of emergency services and relevant authorities (including TfNSW and EPA officers).	Contractor	Detailed design / Pre-construction
Cu1	Cumulative impacts	The CEMP and all relevant environmental management plans will be prepared, and updated as required, to consider other developments in the area. This will include a process to review and update mitigation measures as new work begins or if complaints are received.	Contractor	Pre-construction/ construction

## 5.3 Licensing and approvals

A summary of the licence and/or approval requirements prior to construction are listed in Table 5-2.

Table 5-2: Summary of licensing and approval required

Instrument	Requirement	Timing
<i>Protection of the Environment Operations Act 1997</i> (s43)	Environment protection licence (EPL) for the excavation of more than 150,000 tonnes of material from the EPA.	Prior to start of the activity.
<i>Water Management Act 2000</i> (s91B)	A water supply work approval from the Department of Primary Industries (Water) to construct a new bore. An exception may be sought in accordance with Clause 39A of the <i>Water Management (General) Regulation 2018</i> .	Prior to start of the activity.
Roads Act 1993 (s138)	A Roads Occupancy Licence from TfNSW for works within the existing State and Regional road corridors and from Warrumbungle Shire Council on local roads.	Prior to start of activity
Fisheries Management Act 1994 (s219)	Permit to obstruct the free passage of fish (temporary or permanent) from the Minister for Primary Industries.	Prior to start of activity (if required)
Fisheries Management Act 1994 (s199)	Provide written notice of any dredging or reclamation works to the Minister for Primary Industries.	A minimum of 21 days prior to starting the works (if required).
Surveying and Spatial Information Act 2002 (s24)	Approval from the Land and Property Information (LPI) Survey Services to remove the blaze tree.	Prior to start of activity
Crown Lands Management Act 2016	Approval from the Department of Planning, Infrastructure and Environment is required to secure the acquisition and leasing of Crown land and the Travelling Stock Route.	Prior to start of activity

## 6. References

TfNSW 2020, *Newell Highway Upgrade at Coonabarabran Value management post-workshop study report* (RMS 2020)

Roads and Traffic Authority 2011, *Guide 1: Pre-clearing process of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011)



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Customer feedback

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