

# Newell Highway upgrade at Coonabarabran

## Preferred Option Report

Roads and Maritime Services | September 2019

---



THIS PAGE LEFT INTENTIONALLY BLANK



## About this document

### Document information

<b>File name</b>	NHUC – Preferred Options Report.docx
<b>Objective ID</b>	A28537581
<b>Version number</b>	4.0
<b>Date</b>	18/08/19
<b>Prepared by</b>	Aurecon

### Project information

<b>Project name</b>	Newell Highway Upgrade Coonabarabran
<b>Project number</b>	P.0011363
<b>Start location</b>	Newell Highway, 2000m south of Bandulla Street
<b>End location</b>	Intersection of Newell Highway (A39) and Oxley Highway (B56)
<b>Road number</b>	A39
<b>Road name</b>	Newell Highway

### Approvals

<b>Approval and authorisation</b>	<b>Position</b>	<b>Name</b>	<b>Date</b>
<b>Prepared by</b>	PM/DM	Alex Saba/Irena Sims	18/08/19
<b>Approved or authorised by</b>	Project Development Manager	Ed Paas	18/08/19

### Revision history

<b>Issue</b>	<b>Date</b>	<b>Revision description</b>
<b>1.0</b>	31/07/19	First draft issue
<b>2.0</b>	02/08/19	Final draft
<b>3.0</b>	05/08/19	Final issue for approval
<b>4.0</b>	18/08/19	Issued for approval

# Executive summary

## Overview

The Newell Highway is a major connection for freight and road users travelling between Victoria and Queensland.

Roads and Maritime is upgrading the Newell Highway at Coonabarabran to facilitate the movement of heavy vehicles improve safety through the township and increase travel time savings.

Following earlier studies and a Value Management Workshop with key stakeholders including representatives from Roads and Maritime, Warrumbungle Shire Council and a wide range of technical specialists, a preferred option for an outer town bypass has been recommended to the east of the existing Newell Highway alignment.

## The current situation

The NSW Government is funding the upgrade of the Newell Highway at Coonabarabran and is part of the \$500 million Newell Highway Upgrade Program. The upgrade has been identified in the 2015 Newell Highway Corridor Strategy.

The Newell Highway currently runs through the regional centre of Coonabarabran. Heavy vehicles including HPV PBS3a currently travel along the existing corridor through the town.

## The selection processes

Roads and Maritime carried out early investigations which considered the project objectives. This information was used to inform the initial upgrade options for possible Newell Highway alignments and included traffic, environmental, heritage and land use investigations.

Based on these studies, broad options were developed by Roads and Maritime Services which considered upgrading the existing Newell Highway through Coonabarabran or via bypasses along various route alignments to the east of the town. These options were reduced to six key options which were assessed via a Value Management Workshop during the Strategic Design Phase. The outcomes from this workshop showed minimum differences between the bypass options, with significant differences to the ratings of the through town option.

Three options were selected by the project team and approved by Roads and Maritime, based on the output from previous value management workshops for further assessment:

- Option 1 (EN) - Upgrade of Newell Highway through Coonabarabran
- Option 2 (Q4) - Inner Bypass Route, to the east of Coonabarabran.
- Option 3 (Q1) - Outer bypass route, to the east of Coonabarabran.

The three options are shown in Figure 1.

## The solution

Following preliminary investigations on route options, a Value Management (VM) Workshop was held. This workshop brought together key stakeholders including representatives from Roads and Maritime, Warrumbungle Shire Council and a wide range of technical specialists to review the three route options, which considered the project objectives and assessment criteria.

The preferred route option, as recommended by workshop participants, is Option 3 (Q1), shown in figure 1 which will construct an outer bypass route to the east of Coonabarabran. This option performed the best across all function-based criteria for short-term and long-term functions including road safety and travel efficiency. The preferred option performed best for heritage landmarks, noise, air quality and vibration and had the least impact on town amenities and parking. The preferred option will be predominantly constructed offline with connections to existing roads at four major locations with the intersections providing priority to Newell Highway traffic.

Benefits of the bypass will include increased safety through the Coonabarabran township and increase travel time savings.



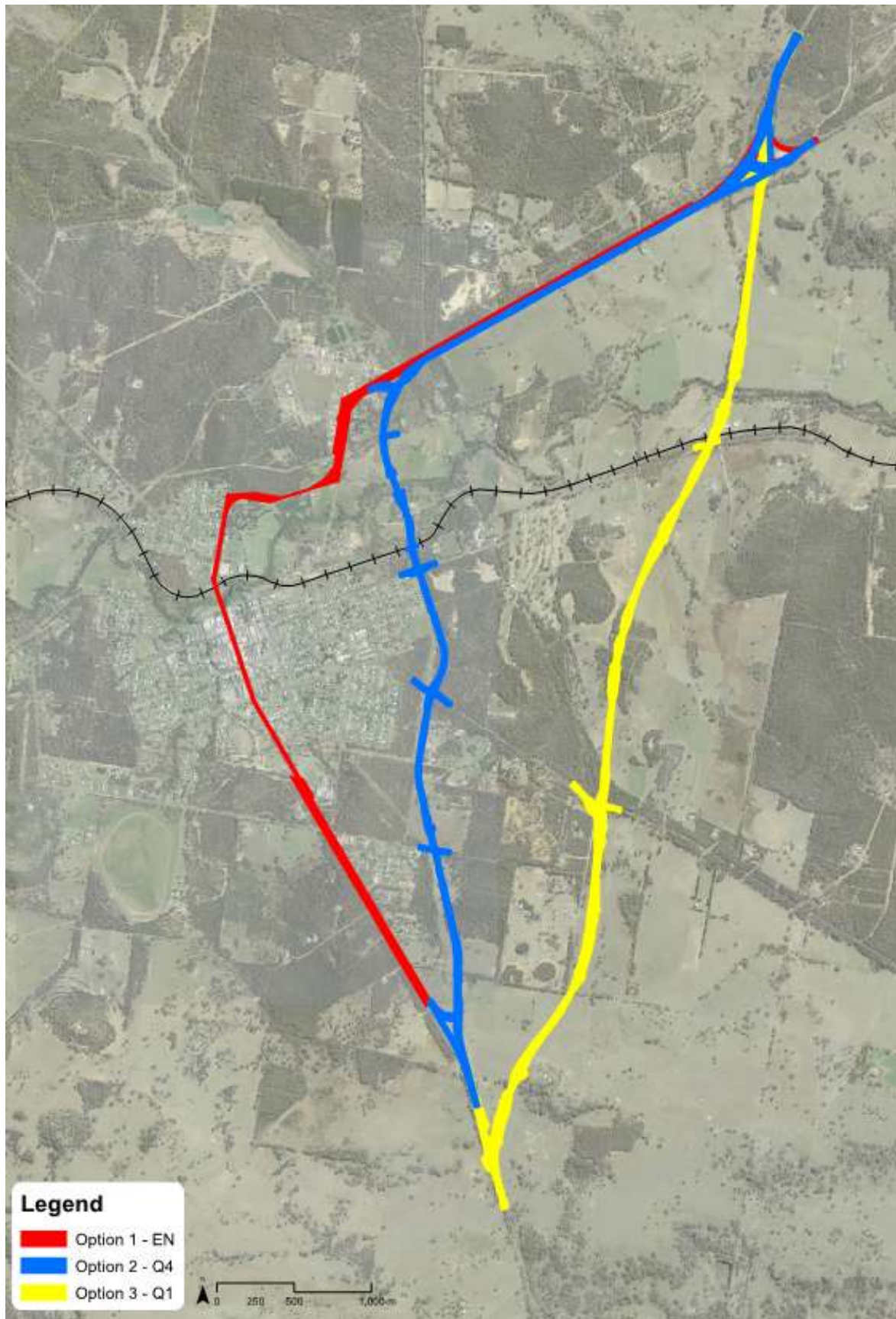


Figure 1 Design Options Assessed

## Contents

1.	Context .....	7
1.1	Background .....	7
1.2	Project objectives .....	9
1.3	Purpose of this report.....	10
2.	Issues and constraints .....	11
2.1	Preliminary environmental information.....	11
3.	Value management process .....	14
3.1	Value management workshop.....	14
3.2	Assessment options .....	15
3.3	Value management outcomes .....	21
4.	Preferred option.....	22
4.1	Recommendation of preferred option.....	22
4.2	Next Steps.....	22

# 1. Context

## 1.1 Background

The project is located along the Newell Highway at Coonabarabran, between Dubbo and Narrabri. The existing Newell Highway, through Coonabarabran, is shown in Figure 2. The highway at this location is a restriction for passageway of High Productivity Vehicles (HPV's), in particular, HPV PBS3a.

Coonabarabran is the administrative centre of the Warrumbungle Shire and the Astronomy Capital of Australia with Australia's largest optical telescope research facility (Siding Spring Observatory). It is at the junction of the Oxley and Newell Highways. The closest regional attractions include the observatory and the Warrumbungle National Park.

The town's population is 3,290 with 20% of people under 15 (NSW average 19.7%) and 26% over 65, NSW average 16.3%<sup>1</sup>. The main industries employed include Health Care and Social Assistance and Public Administration and Safety, with the top employers for the Warrumbungle Shire local government area being in agriculture, forestry and fishing\*.

The town is situated half way between Melbourne and Brisbane and is on the main inland truck route between Queensland and Victoria via the Newell Highway. The Gwabegar rail line passes through the town; however, this rail line has been disused for many years.

The current passage along the Newell Highway through Coonabarabran does not fully accommodate for passage of HPV's due to geometric, safety and pavement performance constraints. The existing passage for over-dimension vehicles is via Namoi Street to the west of the town centre, which is near the town's main water source. This route is subject to flooding with a pavement that does not meet long term performance requirements.

The upgrade of the Newell highway is required to address the following issues:

- Facilitate access for HPV PBS3a on the Newell Highway from Dubbo to Queensland by avoiding geometrically substandard intersections
- Unreliable connectivity of the Newell Highway for HPV PBS3a vehicles
- Reduction in vehicle operating costs and increases in travel time savings
- Amenity and pedestrian access improvements for local community
- Reduction of heavy vehicle noise and stock created odour

---

<sup>1</sup> Data from 2016 Census





Figure 2 Existing Newell Highway alignment through Coonabarabran

## 1.2 Project objectives

The key project objective is to upgrade the Newell Highway to provide access for HPV PBS3(a) vehicles through or around Coonabarabran.

The key project objective above is supplemented with fundamental project benefits, as set out by Roads and Maritime Services, and are described in Table 1.

*Table 1 Fundamental project benefits*

Project benefits	Description
<b>Improve journey time and reliability for road users</b>	The existing Newell Highway alignment does not allow for safe passage of HPV PBS3a vehicles through Coonabarabran, providing a restriction to the road network.  The percentage of heavy vehicles utilising Newell Highway restricts the passage of passenger vehicles and affects journey time.
<b>Ease traffic congestion</b>	The preferred route option will reduce traffic congestion by decreasing number of conflict points and providing priority to the Newell Highway network.
<b>Improves connectivity to the wider road network for all road users and improves amenity.</b>	Highway Upgrade through Coonabarabran will be assessed against improves the wider road network connectivity.  Amenity improvement to the Coonabarabran community will be considered.
<b>Improves road safety for all users</b>	Existing route of Newell Highway is adjacent to town precincts and shops and runs through school zones. By providing a bypass of Coonabarabran, road safety is improved through town, and for heavy vehicles utilising the bypass.
<b>Consider road function, local land use activity and access needs</b>	Route option selection will be based on the end user road function whilst considering needs of the community and stakeholders directly affected by the project.

Roads and Maritime work to achieve high quality project outcomes across various areas including road user, environmental, urban design, and health and safety. These factors are fundamental to enable the design development, options evaluation and selection and are reflected in Table 2.

*Table 2 Project requirements*

Project requirement	Description
<b>Minimise environmental impacts</b>	There are a variety of environmental impacts to consider for the project. The priorities of the customers, community and stakeholders will inform the identification of a preferred option which achieves minimised environmental impact.
<b>Achieve positive urban design outcomes</b>	Selection of the preferred option will consider achieving a positive urban design outcome through the development and application of appropriate urban design objectives and principles
<b>Fit for purpose design</b>	Fit for purpose design assessment to meet the required design life for the identified need and that maximises the project 'value for money'
<b>Safety of workers and customers</b>	Design that meets WHS legislation and in particular is safe, efficient and practical for workers and customers in the vicinity during planning, construction and operational phases.

There are a significant number of givens that will inform the design through comparison of options. The givens noted below are non-negotiables:

### 1.2.1 Project Scope:

- Facilitation of access for HPV PBS3a on the Newell Highway from Dubbo to Queensland by avoiding geometrically substandard intersections
- Given options for assessment:
  - Option (Q1) outer bypass option – two-lane two-way 110km/hr carriageway (120km/hr design speed) with wide centreline treatment
  - Option (Q4) inner bypass option – two-way two-lane 80km/hr carriageway (90km/hr design speed with wide centreline treatment)
  - Option (EN) existing Newell Highway alignment upgrade two-lane, two-way with various speed zones 40, 50, 70, 110 km/hr and various intersection and centreline treatments.
- Provide new formation suitable to meet the current and future freight demand.

### 1.3 Purpose of this report

The purpose of this report is to describe how the preferred route for the Newell Highway upgrade through Coonabarabran was selected. The report describes the assessment of the three strategic options that were assessed at a Value Management Workshop.

The report analyses the three options against assessment criteria and identifies and recommends a preferred option to be taken forward for further development, community consultation, geotechnical and environmental investigation.

## 2. Issues and constraints

### 2.1 Preliminary environmental information

Early investigation carried out by Roads and Maritime has identified constraints which have been used throughout the value management process.

#### 2.1.1 Aboriginal Heritage

There are few Aboriginal Heritage Information Management System (AHIMS) registered sites within the options alignment and an assessment indicated that these are either destroyed or were not found. However, the assessment found a new Aboriginal site.

Sites in the wider area included modified trees, grinding grooves and an Aboriginal place.

Due to the presence of a water and flat and gently sloping terrain, the area around the option alignments further sites of Aboriginal occupation could potentially be found. Occupation would be likely along named creeks and on raised landforms adjacent to seasonally inundated floodplains.

An assessment was made by Roads and Maritime with regards to the preliminary information available for assessment of Aboriginal Heritage and it was deemed this constraint would be removed from being considered in the Value Management Workshop. This is largely due to the likelihood that unrecorded Aboriginal sites exist within the study area.

#### Project Implications

There is a strong likelihood that unrecorded Aboriginal sites exist within the study area and it may not be possible to avoid direct impact to all Aboriginal heritage sites. Known Aboriginal heritage sites and potential for previously unrecorded sites will be carefully considered during design development, in order to minimise potential impact. A detailed investigation will enable the impact to be addressed with specific control measures to minimise and eliminate harm during construction and operation of the upgraded highway.

#### 2.1.2 Non-Aboriginal Heritage

Known Non-Aboriginal Heritage sites relate to the history and formation of Coonabarabran. The sites include:

- Coonabarabran Courthouse (S170, Warrumbungle Local Environmental Plan (WLEP))
- Coonabarabran General Cemetery (WLEP)
- Coonabarabran Clock Tower (WLEP)
- Coonabarabran Railway Precinct (S170)
- Coonabarabran Conservation area – in the centre of town (WLEP)

A Heritage assessment, completed by Roads and Maritime, identified a few additional potential heritage items that are not listed on any register, including the Coonabarabran War Memorial Baths, a residence and the Wallerawang-Gwabegar railway.

#### Project Implications

There is a possibility that Non-Aboriginal heritage items are impacted during construction of the Newell Highway upgrade at Coonabarabran. Roads and Maritime will ensure that impact is minimised to non-Aboriginal heritage items during the design process. Consultation with the community and Warrumbungle Shire Council will be completed by Roads and Maritime to ensure preservation of history.

#### 2.1.3 Biodiversity

There are four broad vegetation types that have been identified within the three option corridors, which include:

- White Box woodland

- Blakely's Red Gum woodland
- Black Cypress Pine- Scribbly Gum woodland
- Black Cypress Pine- White Bloodwood woodland.

In addition to the above vegetation, it has been identified the Castlereagh River and larger patches of intact contiguous vegetation could provide good regional fauna connectivity. Some of the vegetated areas would support Koala feed trees. It should be noted that Castlereagh River is identified as a key fish habitat.

### **Project Implications**

The Preliminary Environmental Impact study undertaken by Roads and Maritime provides key vegetation and fauna impacts for the three route options. The items identified will have a direct impact on the design development and construction.

A Review of Environmental Factors (REF) will be prepared to inform the design and minimise impact to the existing environment.

#### **2.1.4 Land Use**

Existing land use in and adjacent to the three route alignment options include:

- Urban development (residential, commercial, educational, recreation) associated with Coonabarabran
- Rural grazing/farming land
- Some key features in the landscape include:
  - Castlereagh River and floodplain
  - Wallerawang to Gwabegar Railway line
  - Travelling stock routes

There are a number of different social infrastructure features mainly associated with and surrounding the town (including educational, religious, medical and recreational facilities).

#### **2.1.5 Traffic and Transport**

The Newell Highway is the main regional connection through the area providing connectivity from Queensland to Victoria predominantly for the movement of freight. The highway provides Regional connectivity to the Central West of NSW.

The Newell Highway is predominantly a two-way road, one lane in each direction with overtaking lanes to the south and north of Coonabarabran. At the northern end of the town, the Newell Highway crosses the Oxley Highway, with priority provided to Oxley Highway traffic. The speed along the Newell Highway is 100km/hr either side of town, with a 70km/hr transition zone and 50km through Coonabarabran town centre. At the southern end of Coonabarabran is where Coonabarabran Public School and Coonabarabran High School are located, for which the speed limit is reduced to 40km/hr during school zone operation.

Other arterial roads that pass-through Coonabarabran that are critical for local community and wider traffic network include Timor Road, Purlawaugh Road and Baradine Road. Purlawaugh Road and Baradine Road both cross the Newell Highway in a southeast to northwest direction, and both form part of Main Road 129 which runs between Quirindi and Warren. This forms a key connection for agricultural freight.

### **Pedestrian and Cycle paths**

Coonabarabran town centre is accessible for pedestrians via footpaths that run parallel with the road network. The footpath network is within the centre of town and ceases outside of the CBD.

There are no existing dedicated cycle facilities along the Newell Highway or through town.

### **Public transport**

Coonabarabran is not connected to the rail network, but instead is connected with NSW train buses that provide access to the rail network at Lithgow Station.



No public buses operate within Coonabarabran. School buses and other private bus services operate within Coonabarabran.

### **Project Implications**

The current and future traffic requirements, especially that of heavy vehicles in particular HPV PBS3a, will be a key driver to determining the preferred option. The key objective of the project is provision for HPV PBS3a vehicles for safe and efficient travel along the Newell Highway.

#### **2.1.6 Amenity and Sensitive Receivers**

The majority of sensitive receivers are located within the extent of Coonabarabran town centre and comprise of:

- Residential buildings
- TAFE, schools and child care centres
- Recreational areas
- Various businesses
- Places of worship
- Emergency services
- Health care centres

### **Project Implications**

The preferred alignment will be chosen such that the short term and long-term impacts on amenity and sensitive receivers is reduced. The potential impact on the population, quality of life, education facilities, local business, social and recreational infrastructure is to be minimised.

#### **2.1.7 Hydrology and Flooding**

##### **Hydrology**

The Castlereagh River catchment is sourced from the Barwon-Darling system of rivers which originate from the Warrumbungle ranges in the Warrumbungle National Park. Coonabarabran's town water supply is from the Timor dam which is located upstream of the town. The Castlereagh River has several tributaries including Dog Trap Creek, Chinamans Creek and other several unnamed tributaries.

The existing Newell Highway comprises of various sized culverts and a bridge over Castlereagh River which contribute to the Coonabarabran catchment area.

##### **Flooding**

Flooding of the Castlereagh River is confined to the immediate vicinity of the river leaving Coonabarabran town generally unaffected, with the exception of Naomi St and Horsley St which are subject to flooding due to low lying terrain.

During rain events the Castlereagh River experiences fast rise and fall with high flow velocities due to upstream steep gradient. Detailed flood modelling will be undertaken during the future planning phases of the project. During extreme flooding the Warrumbungle Shire Local Flood Plan shows evacuation of the town will be required to Gilgandra or Gunnedah via the Newell Highway and/or Oxley Highway.

### **Project Implications**

The hydrology and flooding within Coonabarabran is largely understood as the Warrumbungle Shire Council data shows that historical flood impacts on existing infrastructure is low.

Based on the existing bridge and culvert structures ability to mitigate any afflux and velocity impacts, it is understood that each of the proposed route options will not adversely impact hydrology or flooding. Based on the inability to distinguish differences of the sub-criteria impacts, hydrology and flooding have not been taken into consideration during this Value Management and Multi-Criteria Assessment (MCA) process.

### 3. Value management process

Following preliminary investigations on the three route options, a Value Management (VM) Workshop was held. This workshop brought together key stakeholders including representatives from Roads and Maritime, Warrumbungle Shire Council and a wide range of technical specialists to review options that considered the project objectives and assessment criteria.

The workshop followed a structured process led by an external facilitator. The VM Workshop intended to recommend a preferred option for the alignment of the Newell Highway Upgrade at Coonabarabran. Assessable criteria to compare each option was agreed to and weighted by workshop attendees as show in Table three and four below.

*Table 3 Key criteria weighting*

Key criteria	Overall weighting
<b>Function</b>	40%
<b>Environment</b>	20%
<b>Socio-economic</b>	25%
<b>Cost</b>	15%

*Table 4 Sub-criteria weightings*

Key criteria	Sub criteria	Weighting
<b>Function</b>	Short-term (construction-phase) function, flexibility and capacity	2%
	Long-term (operational-phase) function, flexibility and capacity	6%
	Road safety	16%
	Travel efficiency	16%
<b>Environment</b>	Biodiversity	8%
	Heritage	6%
	Noise and vibration	6%
<b>Socio-economic</b>	Current land use	6.3%
	Urban design	6.3%
	Amenities	6.3%
	Community preference	6.3%
<b>Cost</b>	Capital cost	15%

#### 3.1 Value management workshop

Initially participants were presented with the three route options, including the results of investigations for each of the options.

The criteria for assessment were developed based on the givens, project objectives and the constraints prior to the workshop. The key impact areas that were turned into criteria were function, environment, socio-economic and cost.

For each of the key criteria there was a sub-criterion defined which the participants of the workshop agreed on the intent and whether it would add value to differentiate between the three options. The sub-criteria was also weighted pre-workshop.

Participants engaged in open discussions to evaluate the pre-workshop weightings that were assigned to each criteria and sub-criterion ranked by importance. The discussion was held against the project to reach an agreement on the final weighting.

The Value Management Workshop generated constructive discussion surrounding the assessment criteria weighting and the different route options.

Each sub-criterion was split further into measurable performance principles against which a score was applied to produce a value assessment. Scoring was performed as per the definitions in table 5.

*Table 5 Scoring definitions*

Score	Definition
4	Best performing option / same as best performing option
3	Slightly worse than the best performing option
2	Noticeably worse than the best performing option
1	Much worse than the best performing option

## 3.2 Assessment options

The criteria for assessment was evaluated considering previous investigations and the project objectives. A summary of the key discussions for each criteria and associated scoring is shown in Table six below.

### 3.2.1 Function

Functional assessment and group discussions are summarised against each sub-criterion performance in Table six below.

Table 6 Function sub-criteria general discussion points

Sub criteria	Performance	Option 1 (EN)	Option 2 (Q4)	Option 3 (Q1)	General Discussion
<b>Short-term (construction-phase) function, flexibility and capacity</b>	Number of traffic switches / stages of construction	High number of traffic switches, with full time traffic control, which impacts local community significantly.	Increased number of traffic switches, up to 15, due to 6 new intersections with proposed new Newell Highway.	Least number of traffic switches, up to 10, switches affect highway traffic, not local roads.	Discussion was held surrounding the weighting of traffic switches on the existing Newell Highway, versus traffic switches on existing roads and whether highway traffic switches should carry a heavier weighting due to the volume of vehicles affected.  The group decision was made to regard highway and local road traffic switch with equal weighting and impact.
	Ease of constructability	High interface with local roads, schools, public areas with existing traffic to be maintained.	Minimised interface with local traffic with over half of the alignment offline from existing roads. However, large portion of the project requires interface with live traffic at 6 intersection sites, and along Newell Highway.	Minimal interface with existing local traffic. Large portion of the alignment to be constructed offline, only interfacing with existing traffic conditions at 4 intersections.	The general discussion with the group involved in the MCA process, was there was a clear differentiator between option 1 and 3, with option 1 being difficult to construct, and option 3 being significantly easier to construct, due to interface with existing live roads.  Option 2 required further discussion, with initial thoughts of option 2 being slightly easier than option 3, however due to undulating terrain, proximity to local roads and crossing higher number of local roads, option 2 was agreed to be closer in constructability with option 1.
<b>Long-term (operational-phase) function, flexibility and capacity</b>	Consideration for future transport requirements	Existing corridor doesn't allow for future widening or flexibility and is constrained by current cadastral boundary requiring extensive land acquisition	Area of acquisition allows for growth and widening, however is limited to proximity to the town.	Current area of acquisition allows for growth and future proofing of any potential future transport requirements.	Group discussion held surrounding the future road use through town increasing with future transport growth solely, without considering town population growth. Option 1 constrains growth of the town and does not provide ability to activate development areas.  Option 3 provides best option for town growth, as it activates a good portion of land to the east of town.  Option 2 provides slightly less activation of land and provides a constraint by providing a bypass road alignment tightly along the fringe of Coonabarabran.
	Maintainability	High level of maintenance due to greater traffic demands on existing infrastructure, no provision of alternate access during full closure maintenance activities, diversion only by local roads.	Low level maintenance, ease of traffic control of set up reduces due to undulating terrain and sight distance requirements. Increased number of intersections for maintenance.	Low level of maintenance, with fewest amount of intersections for maintenance. Alignment is predominantly linear allows for greater ease of traffic control set up.	A clear difference between option 1 and 3 was identified by the MCA group. Option 1 had the highest number of concerns and restrictions to maintenance activities, with option 3 providing ease of maintainability. Option 2 was initially assessed as being comparable to option 3, however with discussion and input from the maintenance team, it was assessed at a lesser ease of maintainability.
<b>Road safety</b>	Number conflict points	Significant number of conflict points (16) include intersections, cyclists, pedestrians & parking.	Fewer conflict points (6), comprising of intersections only.	Fewest conflict points (4). Conflict points that are within the design are intersections only.	Options 2 and 3 were noted as having no driveway accesses, as well as no pedestrian or parking interface.  Council noted there may be issues with no direct driveway access to routes under options 2 and 3 from local community.
	Heavy Vehicle percentage mix through town	High mix of heavy vehicles through town, 24%.	Significantly reduced percentage of heavy vehicles through town, 4%.	Significantly reduced percentage of heavy vehicles through town, 4%.	Options 2 and 3 resulted in a significantly lower percentage of heavy vehicle mix through town. Option 1 was revised to the lowest rating, as it had a significantly higher mix of heavy vehicles through town.
<b>Travel efficiency</b>	Heavy Vehicle travel efficiency	Heavy vehicle travel through town at 9:01 minutes. Significantly higher travel time than other two options.	Heavy vehicle travel through town at 6:25minutes.	Heavy vehicle travel through town at 5:15minutes.	All three route options change the priority at Oxley Highway intersection to priorities the Newell Highway movements.  Travel time for heavy vehicles is improved by option 3, providing priority to the north south movement through town.  Travel time under option 2 is slightly less than option 3, due to increased number of intersections. And option 1 is significantly worse than both options, due to higher number of conflict points.

3.2.2 Environment

Environmental assessment and group discussions are summarised in the table below, against each sub-criterion performance.

Table 7 Environment sub-criteria general discussion points

Sub criteria	Performance	Option 1 (EN)	Option 2 (Q4)	Option 3 (Q1)	General Discussion
Biodiversity	Area of vegetation impacted within the project boundary	Area impacted calculated at 24hectares. The discussion during scoring was held around the existing alignment conditions, with less vegetation surrounding than that shown in the GIS used for calculation. This option was scored the best, with affecting the least amount of vegetation.	Option 2 performed the worst as it traverses through significantly thick vegetation.	Area impacted is, originally calculated, to be slightly less than option 1, however after general discussion around the room, this option was decided to be second to option 1 as it did not have an existing road corridor and would result in greater area of vegetation impact.	<p>The calculation for area of vegetation impacted within the project boundary was calculated for option 1 by assessing the existing road corridor and applying widening; options 2 and 3 were assessed by applying a 15m zone, from the road corridor, to both north and south of the alignment.</p> <p>Option 1 scored best with affecting the least amount of vegetation due to existing alignment widening requiring less vegetation to be impacted.</p> <p>Option 2 traverses through significantly thick vegetation and was scored the worst, as this route would affect vegetation the most.</p> <p>Option 3 alignment is through predominately farming land, however has an increased affected one vegetation in comparison to option 1.</p>
	Area of threatened plant community types within the project boundary	Least area affected of threatened plant community.	Increased area affected of threatened plant community, in comparison to option 1.	Increased area affected of threatened plant community, in comparison to option 1.	Option 1 was the best performing in this category with the least area affected of threatened plant community. Options 2 and 3 had an increased area of threatened plant community affected and were scored less.
Heritage	Heritage landmarks impacted	This option had 2 heritage landmarks impacted.	Zero impact.	Zero impact.	<p>The information available for MCA workshop preparation and data analysis noted 2 heritage landmarks impacted which are LEP listed items. During the discussion it was noted by Warrumbungle Shire Council representative a new 2019 Heritage Strategy has been developed, which will increase the number of heritage landmarks impacted by Option 1.</p> <p>With this information the group decided option 1 performs the least, with options 2 and 3 outputting best performance with zero impact to heritage landmarks impacted.</p>
Noise and vibration	Noise, air quality and vibration impacted	Highest number of sensitive receivers.	Reduced number of sensitive receivers, however still significantly higher than option 3.	Significantly less sensitive receivers than both options 1 and 3, least impact on community.	The number of sensitive receivers was calculated with a 200m buffer zone applied to each route option. It was noted during the discuss commercial and industrial receivers were not identified. The impact of noise, vibration and air quality is a change to the existing conditions. Option 3 performed the best, with options 1 and 2 being scored the worst, as they had significantly increased quantity of sensitive receivers.

3.2.3 Socio-Economic

Socio-economic assessment and group discussions are summarised in the table below, against each sub-criterion performance.

Table 8 Socio-economic sub-criteria general discussion points

Sub criteria	Performance	Option 1 (EN)	Option 2 (Q4)	Option 3 (Q1)	General Discussion
Current land use	Number of directly affected acquisition properties	Least number of properties affected, this option was the best performing.	Greatest number of properties affected.	Slightly less number of properties affected than option 2, and significantly more than Option 1.	<p>Option 1 assessed the existing road reserve and widening of alignment, which resulted in the least number of acquisitions required.</p> <p>Options 2 and 3 considered the 15m buffer zone from the road corridor northbound and southbound which resulted in a greater number of acquisitions. Option 3 resulted in half as less acquisitions than option 2.</p>
Future land use	Potential future land use	N/A	N/A	N/A	<p>The initial discussion surrounding this criterion was whether it provided value output from the initial assessment. The group decided that it was a valuable item for assessment as it provided output of potential future land use opportunities.</p> <p>During the discussions it was noted, that both by pass options, options 2 and 3, allowed for future utility corridor.</p> <p>A general discussion was held with regards to what each option provided, in a way of future land use. Option 1 was noted as the ‘do nothing’ option, which didn’t activate any land to the east of the town, however it also did not provide any constraints to Coonabarabran. The other two options were noted as activating land to the east of Coonabarabran, however in different ways and magnitudes. Future land use, with the current data and studies available, has not been adequately assessed and is subject to opinion. Based on this, the group decided to remove this scoring criteria, and it discount it from the multi criteria analysis.</p>
Urban design	Town entry gateway	Option 1 does not require an entry gateway into Coonabarabran, as all vehicles would traverse through town.	As this route runs parallel to existing town roads, with speed varying between 60km/hr and 80km/hr it allows the road user to visually see Coonabarabran, providing more opportunity for town entry gateways.	This option was assessed as the worst performing, as the route is a bypass which does not visually allow the driver to see the town, with full reliance on town entry gateway signage.	<p>Option 1 was assessed as the best performing as all vehicles would pass through town.</p> <p>Option 2 assessed as performing slightly less than option 1, as the road user would be able to view the town from the bypass route.</p> <p>Option 3 allows for a town entry gateway; However, the road user is entirely reliant on the signage provided to assess whether to enter Coonabarabran.</p>
Amenities	Town amenities and parking	Schools, parks, public areas and all street parking would be affected with this route option.	This option has an impact on local roads, the golf course and runs parallel to residential homes and the cemetery.	Nil effect to town amenities and parking.	Option 1 was scored the worst by the group as it will result in impact to schools, parks, public areas and all street parking along the route. Option 2 performed slightly better than option 1 with impacts to local roads, golf course, residential homes and the cemetery. Option 3 performed the best for this criterion as it has nil effect to town amenities and parking
Community	Local community appeal of alignment options	Out of 241 respondents this option was the most appealing.	Out of 208 respondents this option was the least appealing.	Out of 213 respondents this option was significantly more appealing than option 2, but slightly less appealing than option 1.	Originally this criterion was going to be considered against which option was the most appealing to the community. However, a discussion around the room was held as to each option not being compared like for like, as there was a different number of total respondents for each option. Further data was made available to score against, considering which of the options were scored both most appealing and least appealing by the respondents. It should also be noted; the respondents were predominately local community from Coonabarabran. Considering the percentages for most and least appealing against each option, option 1 was the best performing with option 2 the worst performing. Option 3 performed slightly less than option 1, and significantly better than option 2.

3.2.4 Cost

Cost assessment and group discussions are summarised in the table below, against each sub-criterion performance.

Table 9 Cost sub-criteria general discussion points

Sub criteria	Performance	Option 1 (EN)	Option 2 (Q4)	Option 3 (Q1)	General Discussion
Cost	Construction cost based on a 100% strategic concept design (P90 outturn)	Cheapest option.	Significantly higher cost than option 1 at nearly over double the cost of option 1.	Slightly higher cost than option 2.	<p>Based on the cost, option 1 clearly performed the best for this criterion. Options 2 and 3 costs were close and were scored less than option 1.</p> <p>General discussion was held surrounding the value gain out of option 1 versus the increased cost and value gain out of options 2 and 3 and why BCR scores were not considered as part of the cost criteria.</p> <p>The overall benefits of the options have been assessed in all other criteria, hence this criterion only assesses cost. If the BCR was considered, this would evaluate all other criteria again.</p>



Scoring against each sub-criteria performance measure was undertaken next in the process, for which detailed scoring is in Appendix E. A summary of the scoring output is summarised in Table 10.

*Table 10 Summary of scoring output*

	Option 1 (EN)	Option 2 (Q4)	Option 3 (Q1)
<b>Function</b>	3	2	1
<b>Environment</b>	3	2	1
<b>Socio-Economic</b>	3	2	1
<b>Cost</b>	3	2	1

The scoring output tabled above, was subject to a sensitivity analysis to verify the outcome of Option 3 (Q1) as the preferred option.

The sensitivity analysis was completed for each option, for which the balanced workshop weightings were subject to a negative 15% and positive 15% to determine the low weighted and high weighted scoring for each of the sub criteria.

*Table 11 Sensitivity analysis for each option*

	Option 1 (EN)	Option 2 (Q4)	Option 3 (Q1)
<b>Function High</b>	2.78	2.89	3.80
<b>Function Low</b>	2.37	4.04	5.17
<b>Environment High</b>	2.64	3.65	4.61
<b>Environment Low</b>	2.45	3.31	4.41
<b>Socio-Economic High</b>	2.49	3.70	4.74
<b>Socio-Economic Low</b>	2.66	3.24	4.23
<b>Cost High</b>	2.34	3.65	4.84
<b>Cost Low</b>	2.81	3.29	4.13



### 3.3 Value management outcomes

The Value Management Workshop enabled the participants to differentiate a preferred route alignment of Option 3 (Q1) to progress further along design and environmental and geotechnical investigation as:

- It allows for safe and most efficient passage of HPV PBS3a vehicles
- Allows for the safest passage through town by reducing number of heavy vehicles and conflict points, increasing safety for light vehicles, pedestrians and cyclists.
- It had the least impact on town amenities and does not remove any parking within Coonabarabran
- Removes stock odour from centre of town
- Provides for minimal disruption to community during construction phase of the project
- Allows for the easiest maintainability
- Scored the best against every criterion, even under a sensitive analysis.
- The recommendation of the preferred option was subject to the following being resolved:
- Inclusion of Warrumbungle Shire Council Heritage Strategy 2019 is to be considered during design development to ensure alignment does not compromise any items listed.
- East-West vehicle movements from Baradine Road to Purllewaugh Road, essentially heavy vehicles and HPV's, what is the demand, and how will this be integrated into the preferred bypass option
- An item discussed during the MCA process was future land use, and inability to assign a score to the criteria. It is recommended a study be undertaken on future potential land use, for the preferred route option.

## 4. Preferred option

### 4.1 Recommendation of preferred option

Option 3 (Q1) has been recommended as the preferred route alignment for the Newell Highway Upgrade at Coonabarabran as it provides the best outcomes for project objectives. The preferred alignment provides the best connectivity for HPV PBS3a vehicles, the best environmental and safety for all road users. It has the least impact both short-term and long-term on the community as it allows for ease of constructability and maintainability.

The preferred option, option 3 (Q1), performed the best against all function criteria as well as non-Aboriginal heritage impacts, noise, air quality and vibration impact and had the least impact on town amenities and parking.

### 4.2 Next Steps

Roads and Maritime Services are in the process of discussing the preferred option recommendation with the Roads and Maritime client sponsor and progressing through the approval process. Following approval, Roads and Maritime will undertake further community consultation during concept design, site investigations and environmental assessment for the project.

## **Appendix**

### Appendix A. Strategic Options Community Update

# Newell Highway upgrade at Coonabarabran

## Community Update

May 2019



The NSW Government is committed to improving connectivity and safety for all road users including freight vehicles along the Newell Highway.

Roads and Maritime Services is in the planning phase of developing a Newell Highway upgrade at Coonabarabran that will reduce travel time and increase safety of road users and pedestrians. The project will improve freight productivity and provide the community with an efficient connection to major regional facilities.

### Project objectives

- Upgrade the Newell Highway to support more efficient and productive movement of freight
- Improve access to and from major regional facilities as well as existing residential and commercial areas

- Improve travel efficiency for local and regional road users by catering for the mix of vehicles travelling the Newell
- Minimise disruption to road users from road closures, recognising particular needs of the community with no alternate access
- Enhance road safety for all users with improved design features.

Preferred route options being considered include one in town option travelling along the current Newell and two bypass options to the East of town.



## Features

- Route options for construction of a Bypass East of town
- Route option for upgrading the existing Newell Highway in town
- Widen the highway
- Upgrade the road
- New bridge over the Castlereagh River (for Bypass options)
- Newell Highway and Oxley Highway intersection upgrade.

## Involving the community

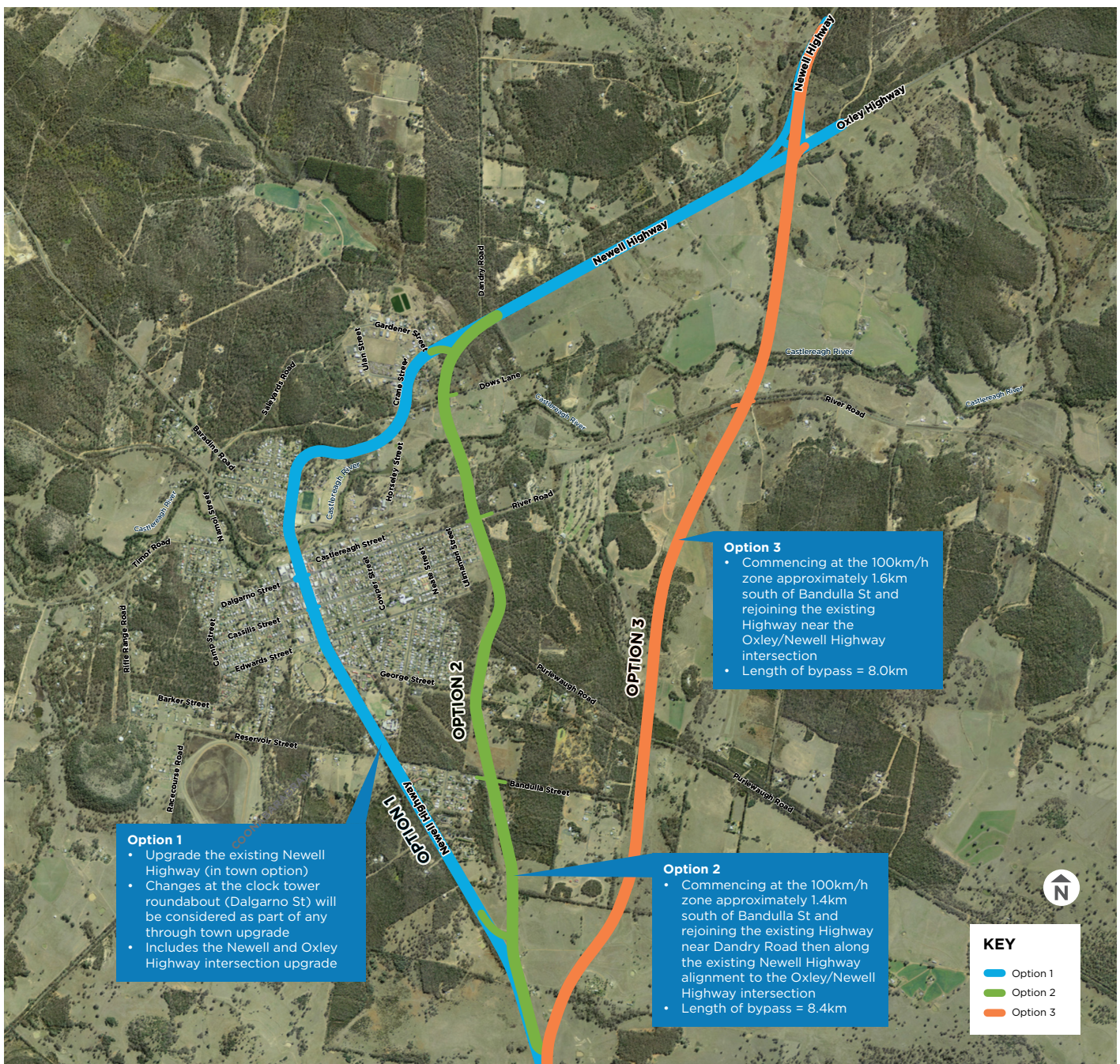
We will continue to work with the community and stakeholders during the planning process. Opportunities to give further feedback will be provided as we determine the preferred option and during concept design and environmental assessment stages.

## Project benefits

- Reduce travel time
- Improving freight productivity
- Reduce costs for vehicle operators
- Reduce traffic congestion
- Reduce conflict between local traffic and heavy vehicles
- Connecting rural communities to major regional facilities
- Improve motorist and pedestrian safety.

Specific to Bypass option:

- Reduce noise and air pollution in town for bypass options
- Less trucks on local streets.







Newell Highway Oxley Highway intersection



Current Newell Highway through town



Heading south into Coonabarabran



## Drop in sessions

You may like to view the three options and speak with the project team at the following times:

**Volunteer Rescue Association, Castlereagh Street**

**Thursday 16 May**

4pm–6pm

**Friday 17 May**

11am–2pm

**Thursday 23 May**

5pm–7pm

**Friday 24 May**

11am–2pm

### Unstaffed display locations

**Warrumbungle Shire Council**

14–22 John Street

Coonabarabran NSW 2357

**Macquarie Regional Library**

John Street

Coonabarabran NSW 2357



**Improve  
pedestrian safety**

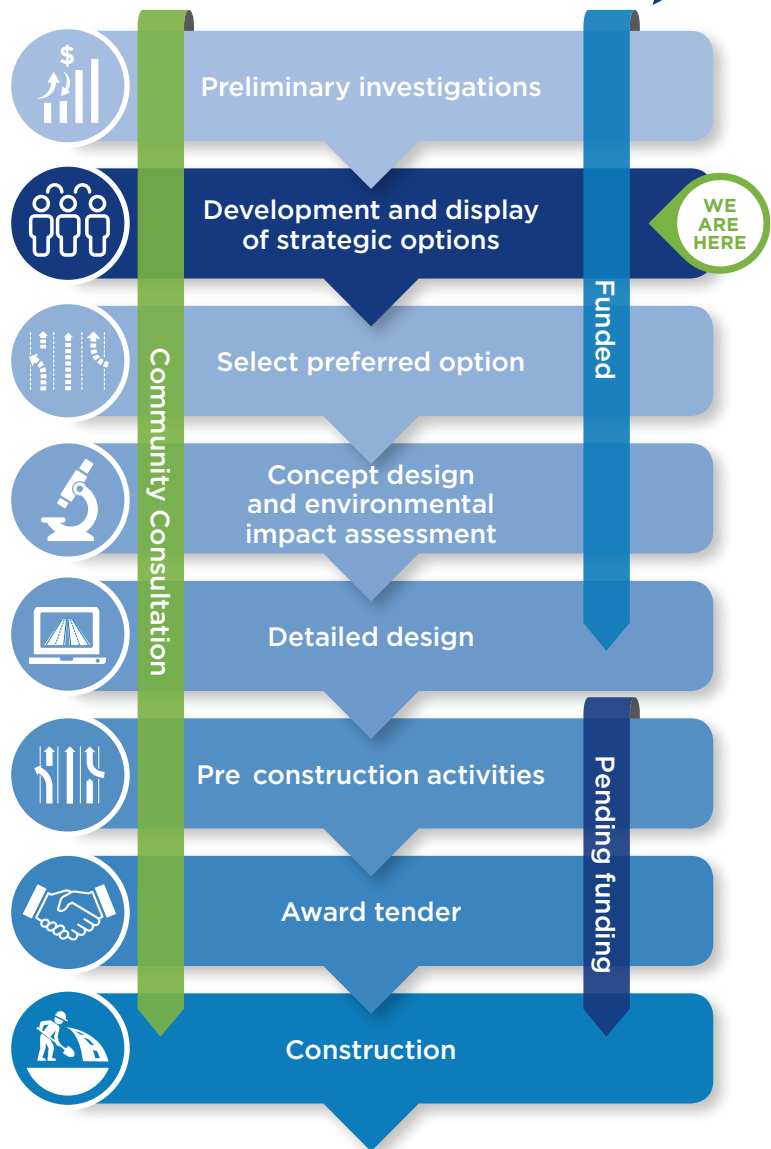


**Improving  
safety**



**Improving freight  
productivity**

## Next steps



## Find out more



1800 741 636



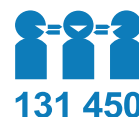
[newell.upgrade@rms.nsw.gov.au](mailto:newell.upgrade@rms.nsw.gov.au)



[rms.work/Coonabarabran](https://rms.work/Coonabarabran)



PO Box 36, Dubbo NSW 2830



**131 450**

If you need help understanding this information, please contact the Translating and Interpreting Service on 131 450 and ask them to call us on 1800 741 636.

