

New England Highway bypass of Singleton

Submissions report

Transport for NSW | August 2020

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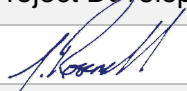
Transport for NSW | August 2020

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Approval and authorisation

Title	New England Highway bypass of Singleton submissions report
Accepted on behalf of Transport for NSW by:	Joel Rosendahl Project Development Manager
Signed:	
Dated:	7 Aug 2020

Document status

Document status	Date	Prepared by	Reviewed by
Rev 0	7 Aug 2020	AECOM Australia Pty Ltd	Transport for NSW

Executive summary

The proposal

Transport for NSW (Transport) proposes to build a New England Highway bypass of Singleton (the proposal). The proposal is located to the west of Singleton and connects the New England Highway to the north and south of Singleton. Key features of the proposal include:

- About eight kilometres of new highway (the bypass) with a single lane in each direction
- Connection with the New England Highway at the southern end of the bypass (the southern connection) including a southbound entry ramp and northbound exit ramp
- A 55 metre long bridge over the bypass at the southern connection
- A 1.7 kilometre long bridge over the Main North railway line, the Doughboy Hollow and Hunter River floodplain, Army Camp Road and Putty Road (bridge over the floodplain)
- Connection to Putty Road including a northbound entry ramp and southbound exit ramp (the Putty Road connection)
- A 40 metre long bridge over the entry ramp at the Putty Road connection
- A 100 metre long bridge over Rose Point floodway
- A 205 metre long bridge over the Hunter River
- A 40 metre long bridge over the New England Highway west of the existing Main North railway line overbridge (known as Gowrie Gates)
- Connection with the New England Highway at Gowrie Gates consisting of a southbound entry ramp and northbound exit ramp. The northbound exit ramp would connect to the New England Highway via a new roundabout intersection at Maison Dieu Road
- A 1.7 kilometre northbound climbing lane between Gowrie Gates and the northern connection
- Connection at Magpie Street including providing access to the nearby industrial area (the northern connection), consisting of a southbound entry ramp, southbound exit ramp and northbound entry ramp
- A 60 metre long bridge over the bypass at the northern connection.

Display of the Review of Environmental Factors

Transport prepared a review of environmental factors (REF) for the New England Highway bypass of Singleton. The REF was publicly displayed for feedback between Monday 16 December 2019 and Sunday 1 March 2020 at Singleton Council Civic Centre, 12 Queen Street, Singleton and Singleton Library, 8-10 Queen Street, Singleton. The REF was also published on the Transport project website and made available for download.

The display locations and website link were advertised in the Singleton Argus newspaper and on Facebook. During this time, Transport invited the public to provide feedback on the proposal. Transport also met with residents and businesses who would be directly affected by the proposal.

In addition, six community information sessions were carried out during the public display period to give the community an opportunity to learn more about the proposal, ask questions and 'have their say'. Two sessions each day were held at Quest Hotel Singleton, 5-7 Civic Avenue, Singleton on 30 January, 6 February and 11 February 2020.

Summary of issues and responses

Public display of the REF and the supporting consultation resulted in a total of 154 submissions from 134 respondents of which 131 were from the general community, one from a government agency, one from Singleton Council, and one from a business.

Of these submissions, 13 per cent were in support of the proposal, six per cent objected to the proposal and 10 per cent were partially supportive of the proposal. The remaining 71 per cent of submissions offered no position on whether they supported or objected to the proposal.

Dual carriageway

The key issue raised in community submissions related to the proposal not being a dual carriageway.

Transport investigated multiple options for the design of the New England Highway bypass of Singleton. The preferred design option was chosen as it best meets the proposal objectives and the strategic need to improve traffic congestion and road safety along the New England Highway through Singleton.

Transport has carried out detailed traffic investigation and modelling to understand the future traffic volumes and split between the existing highway and the proposed bypass. The modelling indicates traffic volumes on the bypass would not reach levels where dual carriageway would be justified in the medium to long term. The modelling demonstrates a single lane in each direction can meet the forecast demand for more than 20 years.

The bypass has been designed with flexibility so that it can be upgraded to a dual carriageway in the future if traffic volumes reach the point where a dual carriageway is required.

Singleton Council's submission

Six key issues were raised by Singleton Council relating to the Putty Road and Gowrie Gates intersections, installation of a dual carriageway, traffic management and the economic analysis. Singleton Council's submission has been addressed separately in this report.

Additional studies

This report also details additional studies and surveys that have been undertaken since the display of the REF. This includes further assessment to identify market gardens near Gowrie, landowner surveys conducted as a result of the Socio-economic impact assessment and new information in regard to a native title claim over the proposal area.

Next steps

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

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

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1 Introduction and background

1.1 The proposal

Transport for NSW (Transport) proposes to build a New England Highway bypass of Singleton (the proposal). The proposal is located to the west of Singleton and connects the New England Highway to the north and south of Singleton. Key features of the proposal include:

- About eight kilometres of new highway (the bypass) with a single lane in each direction
- Connection with the New England Highway at the southern end of the bypass (the southern connection) including a southbound entry ramp and northbound exit ramp
- A 55 metre long bridge over the bypass at the southern connection
- A 1.7 kilometre long bridge over the Main North railway line, the Doughboy Hollow and Hunter River floodplain, Army Camp Road and Putty Road (bridge over the floodplain)
- Connection to Putty Road including a northbound entry ramp and southbound exit ramp (the Putty Road connection)
- A 40 metre long bridge over the entry ramp at the Putty Road connection
- A 100 metre long bridge over Rose Point floodway
- A 205 metre long bridge over the Hunter River
- A 40 metre long bridge over the New England Highway west of the existing Main North railway line overbridge (known as Gowrie Gates)
- Connection with the New England Highway at Gowrie Gates consisting of a southbound entry ramp and northbound exit ramp. The northbound exit ramp would connect to the New England Highway via a new roundabout intersection at Maison Dieu Road
- A 1.7 kilometre northbound climbing lane between Gowrie Gates and the northern connection
- Connection at Magpie Street including providing access to the nearby industrial area (the northern connection), consisting of a southbound entry ramp, southbound exit ramp and northbound entry ramp
- A 60 metre long bridge over the bypass at the northern connection.

Timing for construction of the proposal has not been confirmed and is subject to approval and funding availability. Construction would take around three years to complete.

A more detailed description of the proposal is found in the New England Highway bypass of Singleton Review of Environmental Factors (REF) prepared by Transport in December 2019.

The location of the proposal is shown in Figure 1-1, an overview of the proposal is shown in Figure 1-2 and the property acquisition boundaries are shown in Figure 1-8.

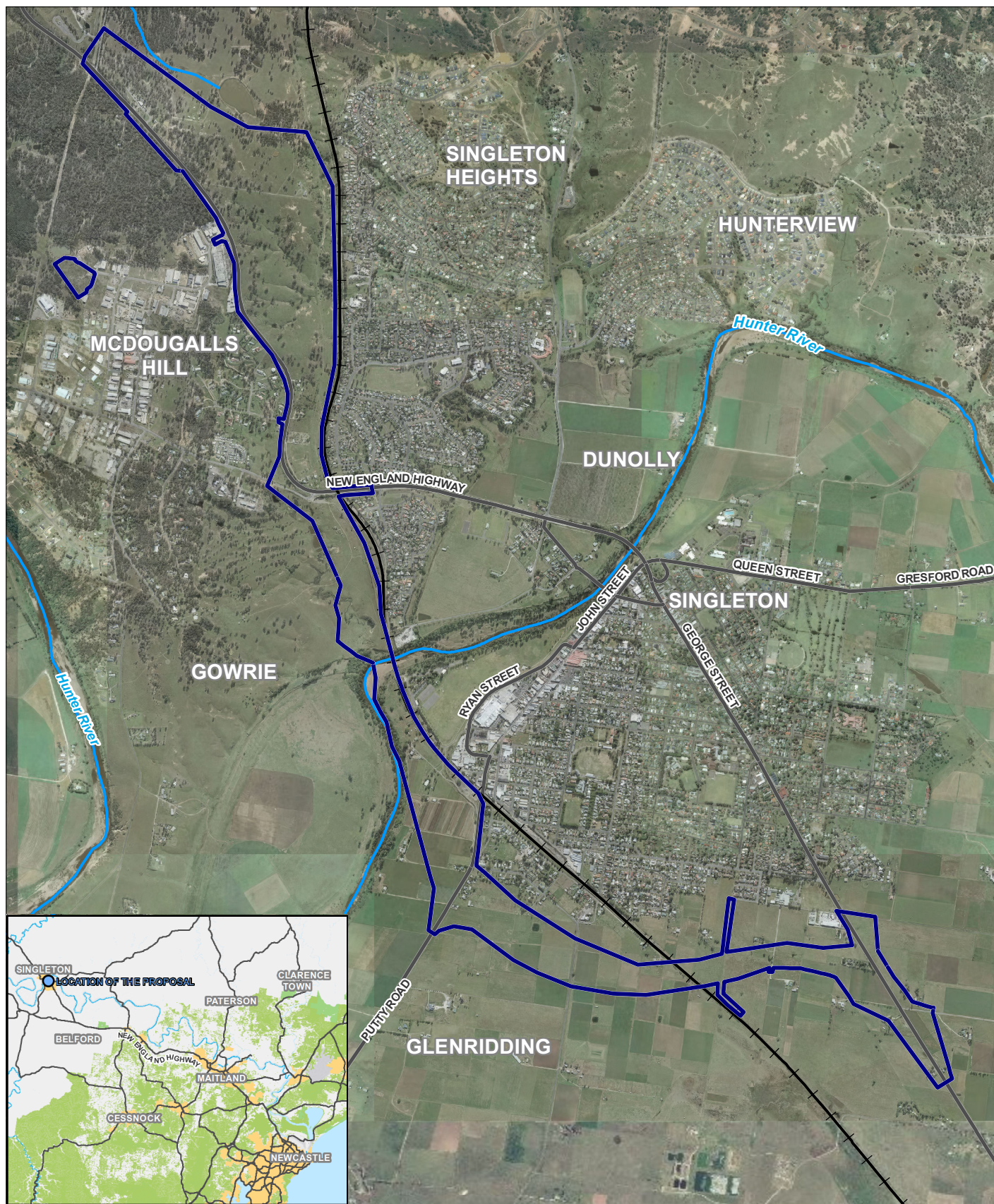


FIG. 1-1 Location of the proposal

Legend

Proposal features

— Proposal area

Other features

— State roads

— Watercourse

— Main North railway line

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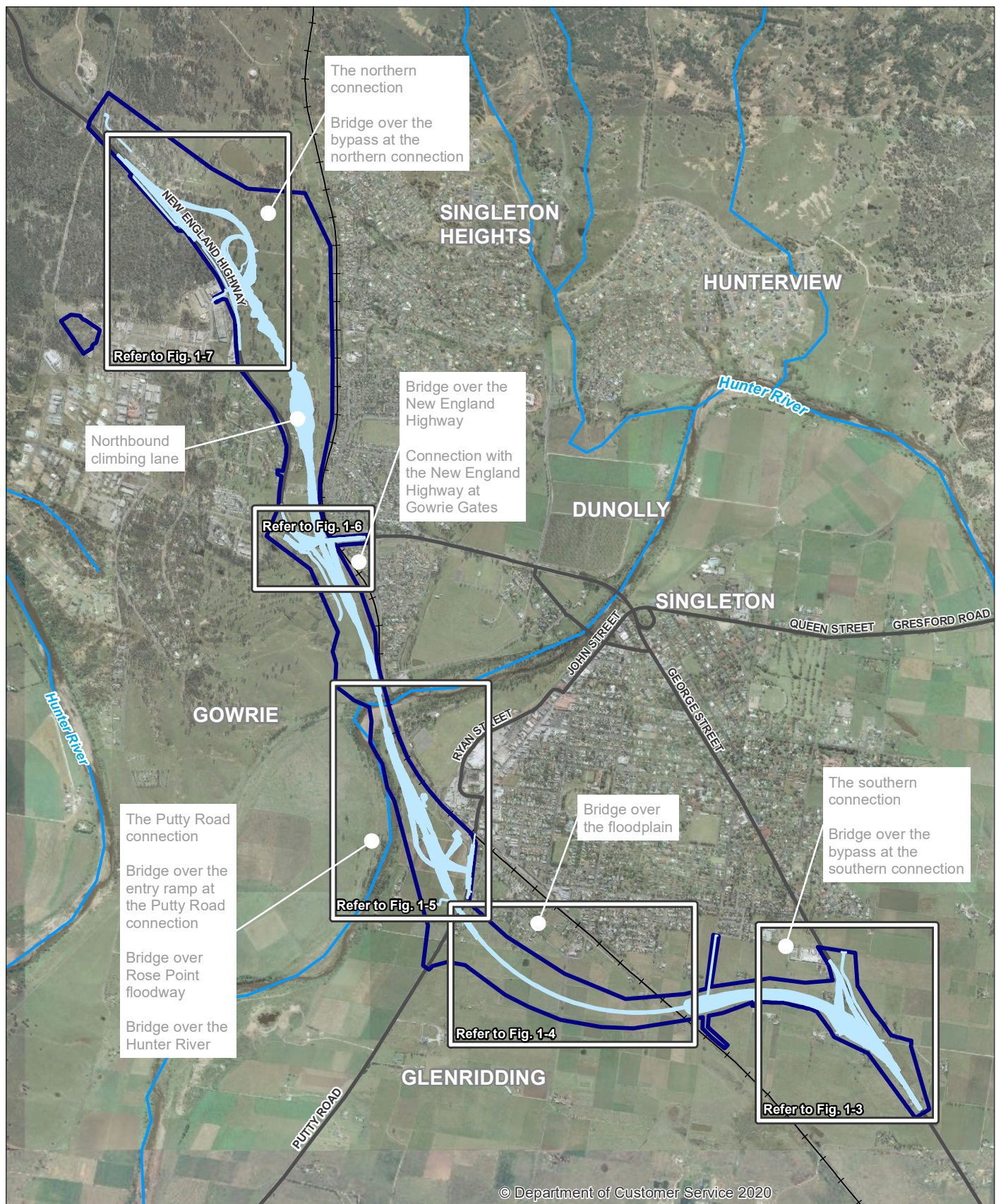


FIG. 1-2 Overview of the key features of the proposal

Legend

Proposal features

— Proposal area

— Proposal design

Other features

— State roads

— Main North railway line

— Watercourse



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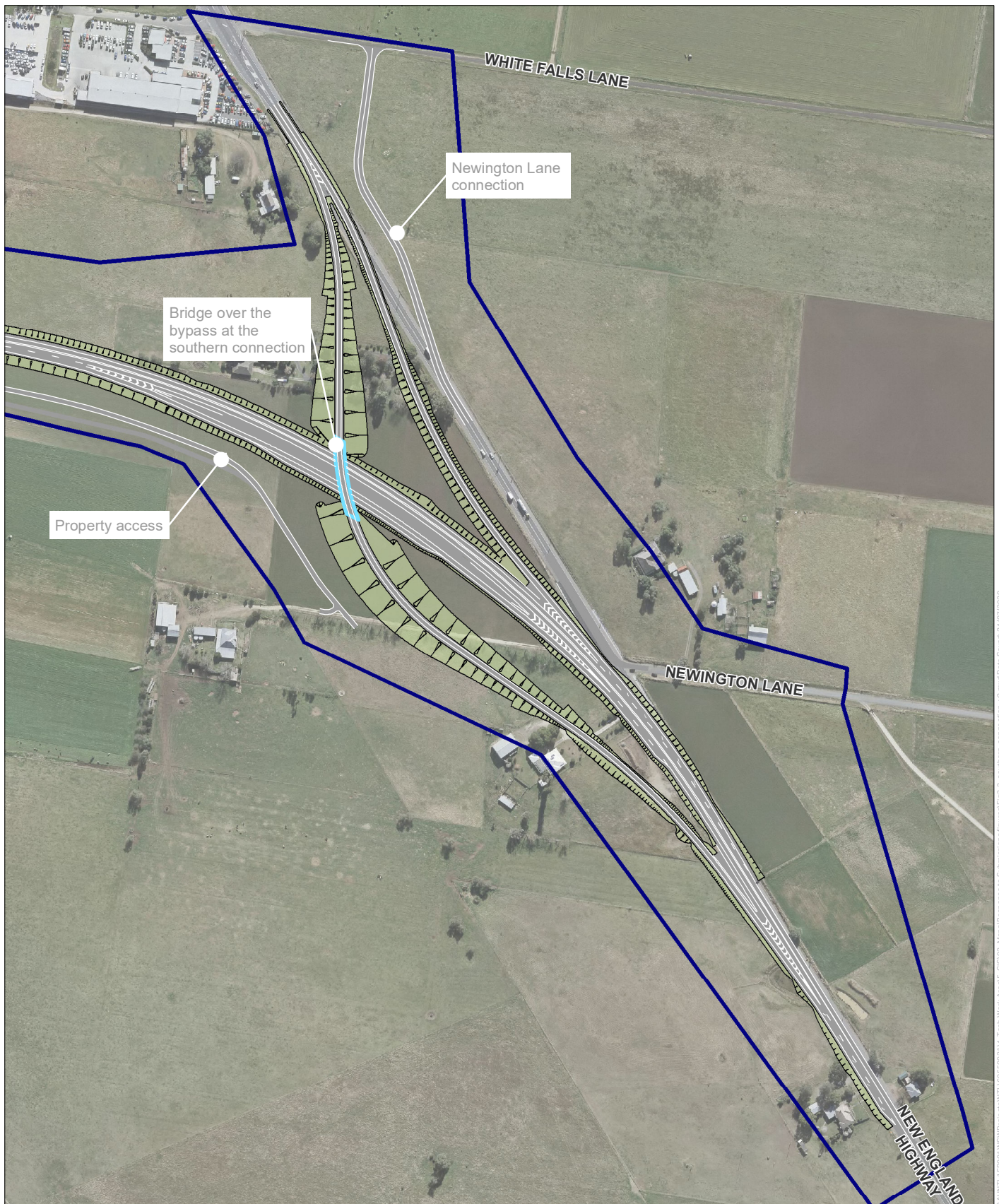


FIG. 1-3 The southern connection

Legend

- Proposal area
- New road surface
- Median
- Bridge
- Earthworks



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FIG. 1-4 Bridge over the floodplain

Legend

Proposal features

- Proposal area
- New road surface
- Median
- Bridge

Other features

- Earthworks
- Roads
- Main North railway line



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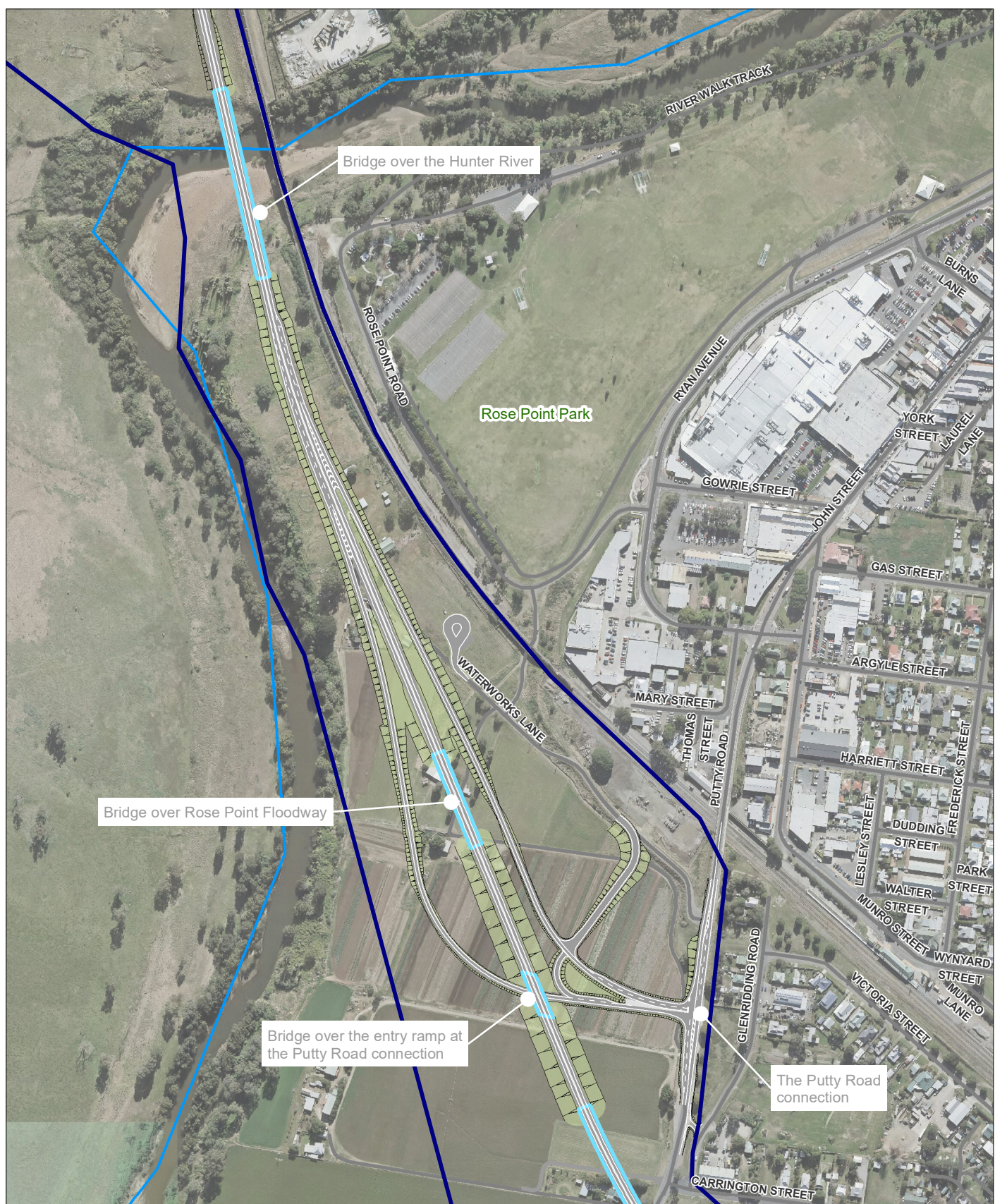
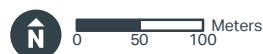


FIG. 1-5 Putty Road connection to the bridge over the Hunter River

Proposal features

- ## Other features



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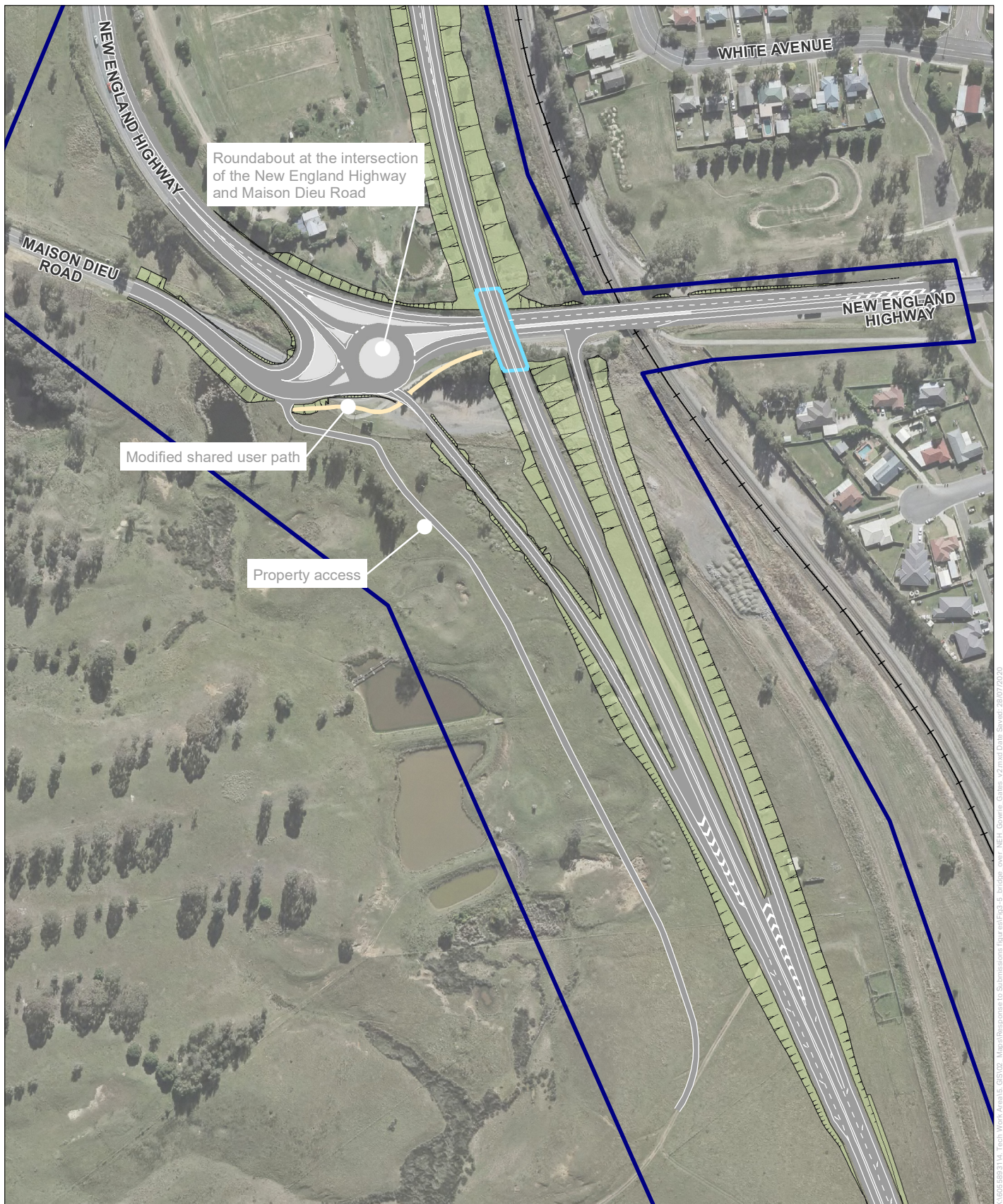


FIG. 1-6 Connection to the New England Highway at Gowrie Gates

Legend

Proposal features

- Proposal area
- New road surface
- Earthworks
- Median
- Bridge

Other features

- Shared user path
- +— Main North railway line



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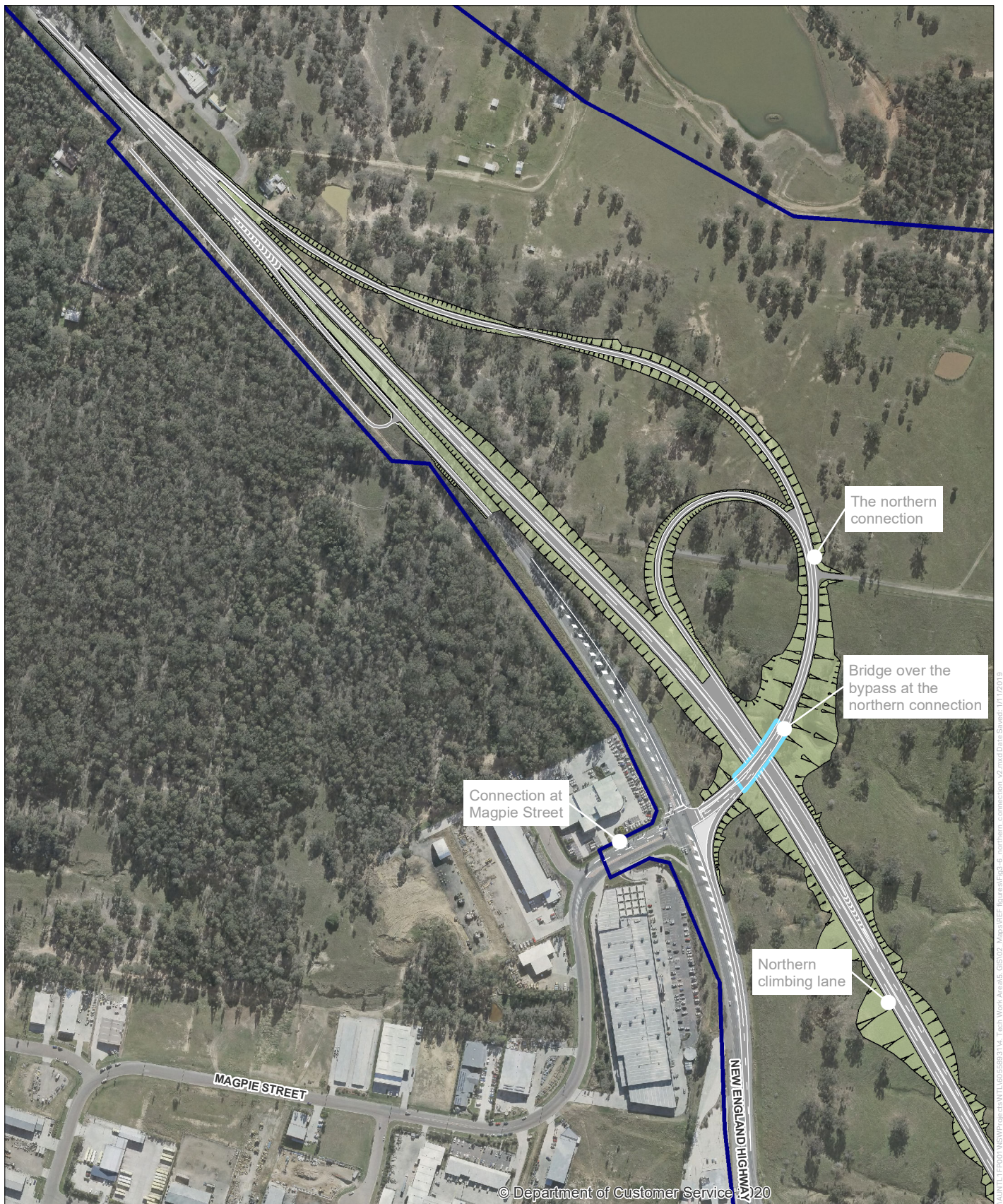


FIG. 1-7 The northern connection

Legend

- Proposal area
- New road surface
- Median
- Bridge
- Earthworks



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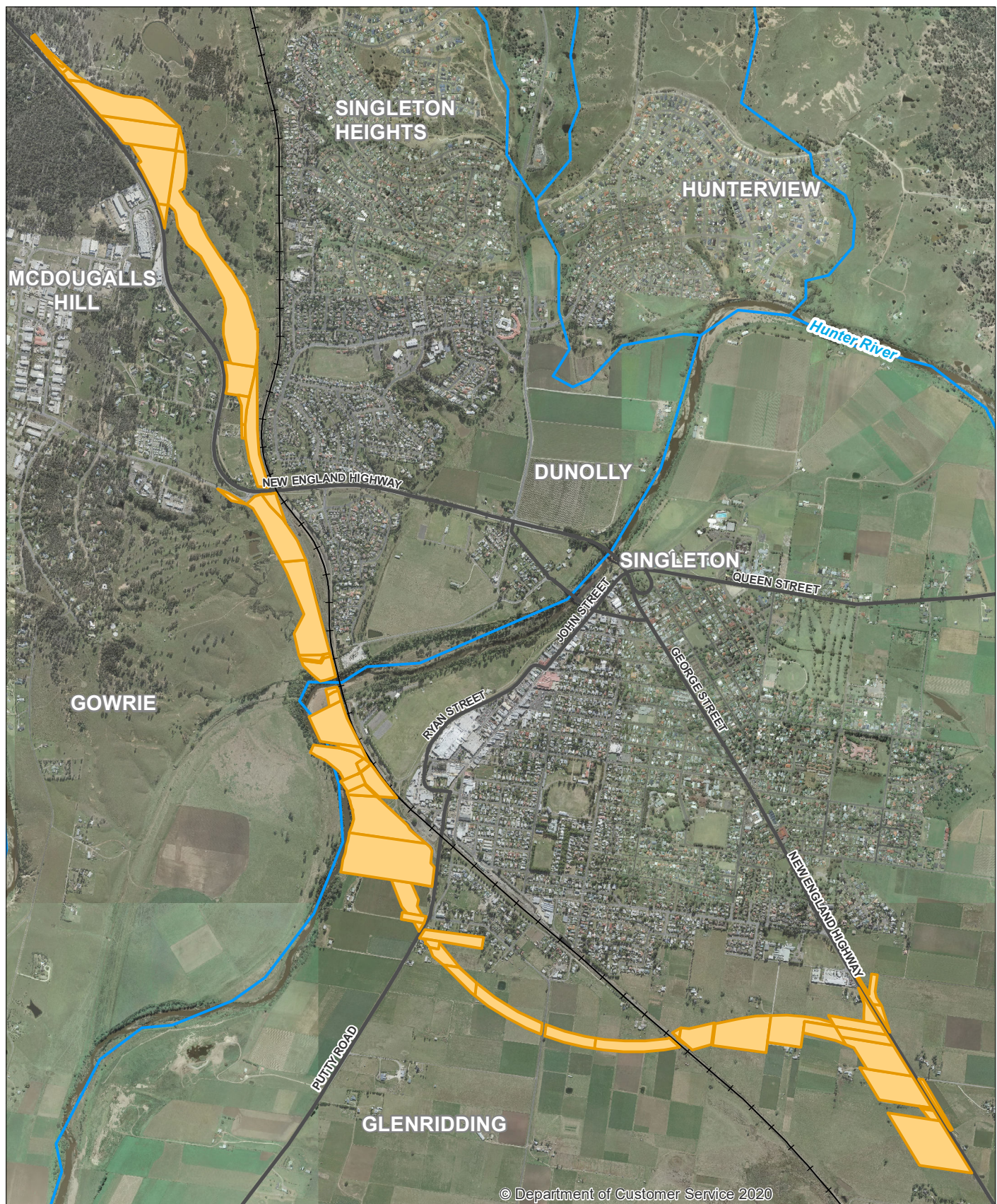


FIG. 1-8 Property acquisition for the proposal

Legend

Proposal features

Property acquisition

Watercourse

Other features

State roads

Main North railway line



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1.2 REF display

Transport prepared a REF to assess the potential environmental impacts of the proposal. The REF was publicly displayed for feedback for 76 days between Monday 16 December 2019 and Sunday 1 March 2020 at two locations, as detailed in Table 1-1. The REF was placed on the Transport project website at rms.work/singleton and made available for download.

Table 1-1: Display locations

Location	Address
Singleton Council Civic Centre	12 Queen Street, Singleton
Singleton Library	8-10 Queen Street, Singleton

In addition, six community information sessions were carried out during the public display period to give the community an opportunity to learn more about the proposal, ask questions and 'have their say'. Two sessions were held each day at Quest Hotel Singleton, 5-7 Civic Avenue, Singleton on 30 January, 6 February and 11 February 2020.

The REF display locations and website link were made available to the community via:

- About 10,000 community updates (refer to Appendix A) featuring proposal background, key features, concept design and display details distributed to Singleton (postcode 2330) on 18 December 2019
- Advertisements in the Singleton Argus newspaper on 18 December 2019 and 30 January 2020
- Posts on NSW Roads Facebook page on 16 December 2019 and on 15 January, 23 January and 17 February 2020
- An interactive online web portal at <https://v2.communityanalytics.com.au/rms/singleton-bypass>.

In addition to the public display, an invitation to comment was sent directly to all stakeholders on Transport's project database.

1.3 Purpose of the report

This submissions report relates to the REF prepared for the New England Highway bypass of Singleton and should be read in conjunction with that document.

The REF was placed on public display and submissions relating to the proposal and the REF were received by Transport. This submissions report summarises the issues raised and provides responses to each issue (Chapter 2). The report also details investigations carried out since finalisation of the REF (Chapter 3).

2 Response to issues

Transport received 154 submissions, accepted up until 1 March 2020, including one from Singleton Council who requested an extension to 1 April 2020, which was granted.

Appendix B lists the respondents and each respondent's allocated submission number. Appendix B also indicates where the issues from each submission have been addressed in Section 2 of this report.

A response to the submission from Singleton Council is provided in Section 3 given the length of the submission.

2.1 Overview of issues raised

A total of 154 submissions from 134 respondents were received in response to the display of the REF. This included submissions from a government agency, a business owner, Singleton Council, and 131 submissions from the community. Some community respondents provided multiple submissions.

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

Of the 154 submissions:

- 20 clearly stated support for the proposal
- Nine clearly stated an objection to the proposal
- 15 suggested some form of change to one or more elements of the proposal
- 109 did not provide a definitive opinion.

The key issues raised in the submission received from Singleton Council were:

- Putty Road and Gowrie Gates intersections
- Installation of a dual carriageway bypass
- Traffic management during construction
- The economic analysis.

The key issues raised in the submission from NSW Environment Protection Authority (EPA) were:

- Environment Protection Licence (EPL) requirement
- Per and poly-fluoroalkyl substances (PFAS) contamination
- Surface water quality monitoring prior to construction
- Dust emission controls
- Operational construction noise monitoring.

The key issue raised in community submissions related to the proposal not being a dual carriageway. A response to this issue is provided in Section 2.2.1

All 154 submissions were identified as unique submissions, with no form letters received. All unique submissions have been assigned a submission number (refer to Appendix B).

It is noted that a petition accompanied a submission, with a total of 116 signatures. This has been recorded as a single submission (ID 19). The petition relates to issues generally considered outside the scope of the proposal. However, Transport has provided a response to the issues raised in the petition in the sections below where relevant to issues raised.

It is important to note that Transport follows issue-based decision making. This means that although preferences and frequency of a comment or issue are noted, Transport examines the issues raised throughout the consultation period using the fact-based assessment process.

2.2 Project design

2.2.1 Dual carriageway

Submission number(s)

8, 10, 11, 15, 16, 19, 22, 23, 25, 26, 28, 31, 32, 33, 34, 35, 37, 38, 39, 41, 43, 44, 45, 46, 47, 48, 50, 51, 53, 54, 55, 56, 57, 58, 59, 63, 64, 65, 68, 69, 73, 74, 75, 76, 77, 78, 79, 80, 82, 84, 85, 86, 87, 88, 89, 91, 92, 93, 96, 97, 98, 99, 102, 103, 104, 106, 107, 109, 110, 111, 113, 114, 115, 116, 120, 121, 123, 125, 127, 130, 131, 132, 133, 135, 137, 138, 139, 140, 141, 142, 143, 146, 150, 151, 152

Issue description

- Concern that the proposal is not a dual carriageway. Specific concerns include:
 - A single carriageway will not fix traffic congestion issues and does not account for future population growth
 - A single carriageway will only move the existing bottleneck
 - A dual carriageway would be consistent with other sections of the New England Highway which are dual carriageway including the Hunter Expressway and at Belford
 - It would be more efficient and cost effective to build a dual carriageway now rather than duplicate in the future
 - A single carriageway is short-sighted
 - In the event of an accident a dual carriageway would provide greater flexibility for traffic
 - There are not sufficient overtaking opportunities
 - There is not adequate space for wide loads or areas for breakdowns
 - A dual carriageway would be safer
 - A single carriageway does not provide enough room for emergency vehicles, including on the proposed bridges
 - The bypass should be designed to accommodate a dual carriageway in the future
- The design would support a potential upgrade to a dual carriageway in the future if required.

Response

Traffic flows along the existing George Street / New England Highway through Singleton are constrained by a range of factors including traffic lights, traffic entering from local roads and adjacent properties, and speed limits of 50km/h and 60km/h.

The proposed bypass would not have these same constraints. Traffic flows would operate more efficiently along the proposed single carriageway, given the connections on and off the bypass have been designed with merging lanes to be free-flow and the bypass would have a posted speed limit of 100km/h.

Transport has carried out detailed traffic investigation and modelling to understand the future traffic volumes and split between the existing highway and the proposed bypass. Of the traffic approaching Singleton, the model results indicated the number of vehicles that would use the proposed bypass and the number of vehicles that would remain on the existing New England Highway toward Singleton.

This modelling indicates traffic volumes on the bypass would not reach levels where dual carriageway would be justified in the medium to long term. The *Austrroads: Guide to Traffic Management* (Austrroads, 2019) suggests a road of this kind has an hourly capacity of up to 1600 vehicles per lane before it becomes necessary to consider duplication. The predicted maximum peak hourly flow in 2046 (which allows for anticipated traffic growth) is 1100 vehicles per lane which indicates the single lane bypass has reached only about 70 per cent of the total available capacity, demonstrating a single lane in each direction can meet the forecast demand for more than 20 years.

The bypass has been designed with flexibility so that it can be upgraded to a dual carriageway in the future if traffic volumes reach the point where a dual carriageway is required. Land acquisition for the proposal includes the required width to construct the dual carriageway in the future. Bridges that pass over the bypass have been designed with sufficient width to allow for the dual carriageway, and where the bypass is on a bridge, such as over the floodplain, an additional bridge would be built beside it to provide the additional lanes.

The additional cost to provide dual carriageway is about \$165 million. This additional cost is not justified given the above traffic modelling. Transport may consider upgrading the bypass to a dual carriageway in the future if traffic volumes reach the point where it is viable.

The proposal includes a 1.7 kilometre northbound climbing lane between Gowrie Gates and the northern connection to provide overtaking opportunities for heavy vehicles climbing between a low point at the Hunter River in the south, to a high point near Rixs Creek Lane in the north near the northern connection.

There are overtaking opportunities on the existing New England Highway south of Racecourse lane at Whittingham and north of Magpie Street at Rixs Creek. These overtaking opportunities are around 15 kilometres apart, which is generally consistent with the guidance within *Austrroads: Guide to Road Design* (Austrroads, 2016).

The proposal is designed to generally have a one metre wide median and three metre wide shoulders. The width of the median and shoulder along the bypass allows for sufficient space for breakdowns, minor accidents and emergency vehicles to safely pass. In the event of a serious accident that requires the closure of the bypass, the existing route through Singleton would be a detour. The bridge over the floodplain would have 2.5 metre shoulders with sufficient space to enable a vehicle to pull over in the event of an emergency.

The proposal would accommodate wide load (and oversize overmass (OSOM) vehicles) subject to an OSOM permit and the required traffic modifications.

The proposal has been designed in accordance with a number of road and bridge standards including relevant safety guidelines such as *Guide to Road Safety – Austroads* (Austroads, 2009). The proposal includes safety barriers and appropriate line marking and signage to provide the required level of road safety on the bypass. The operation of the proposal would reduce traffic volumes along the existing George Street / New England Highway and improve safety for road users and residents within Singleton.

2.2.2 Putty Road connection

Submission number(s)

13, 17, 24, 81, 100, 105, 110, 119, 144, 149

Issue description

- Suggestion for additional ramps at the Putty Road connection to allow additional vehicle access to / from the bypass, including for heavy vehicles in order to address safety issues associated with heavy vehicles using local roads
- Concern that without additional ramps at the Putty Road connection, the proposal removes access for the main street retailers
- Suggestion that there should be a southern entry or emergency exit at Putty Road for times of flood / other disasters
- Suggestion that additional ramps at Putty Road will be required if the proposal is upgraded to a dual carriageway in the future.

Response

As described in Section 6.5.2 of the REF, the assessment of operational traffic impacts considered the proposal with and without south facing ramps from Putty Road. The traffic assessment indicated insufficient traffic demand for the south facing ramps to justify the capital cost of the inclusion into the proposal.

Survey data from the traffic assessment identified that traffic flows on the south facing ramps would be limited and only serve a relatively small number of trips e.g. trips from the New England Highway (south) to the Ryan Avenue shopping precinct. Locations to/from the southern end of Putty Road / Golden Highway would be expected to make use of Range Road rather than travel up to Singleton and then head south. Refer to Section 6.2.1 of Appendix L (Traffic Assessment) for further information.

The additional ramps would cost around \$25 million. There is a high cost associated with the ramps given all structures would need to be elevated to minimise potential flooding impacts at this location.

One of the objectives of the proposal is to remove freight traffic from Singleton that is not stopping within the town (through freight traffic). For the modelled 2026 scenario, it is anticipated that the bypass would remove around 2000 heavy vehicle movements per day (based on modelled traffic volumes on the existing New England Highway south of Waddells Lane).

Other heavy vehicles are required to service businesses both within the central business district (CBD) and throughout Singleton and will continue to do so if the bypass is constructed. These heavy vehicles would include for example local garbage trucks, local suppliers, local tradesman and buses. It is anticipated around 1000 heavy vehicle movements per day would still be required into town (based on the modelled

scenario described above). These vehicles would continue to access Singleton via existing access routes through the town, including along the approved B-double route on George Street / John Street / Ryan Avenue for businesses located on John Street.

The issue of heavy vehicles using local roads is noted and is primarily the responsibility of Singleton Council. We understand that Singleton Council is investigating a mass limit on Kelso Street.

Access to retailers on John Street and George Street would be available via the existing New England Highway / George Street for vehicles travelling north and would be available via the Putty Road connection for vehicles travelling south. This access is not inhibited by the proposal.

As described in Appendix D (Socio-economic impact assessment) of the REF, business surveys were carried out for the proposal. During the business impact surveys, where 39 of the 40 surveyed businesses participated, only 10 per cent of businesses said their primary customers consist of passing trade only. This suggests most customers are local and would generally utilise the local road network to access retailers. The traffic modelling indicated that there would be around 30 seconds difference in travel time between the southern connection and the CBD, using the existing local road network or the proposed bypass (with south facing ramps), and consequently access to the CBD is not inhibited.

Given the existing Hunter River flooding pattern around the location of the proposed Putty Road connection, additional ramps would not provide an increased benefit for flood evacuation as the existing Putty Road between the proposed connection and the town would be cut in times of flood. If in the event of an emergency, where vehicles had to travel south, vehicles could use the existing New England Highway.

If traffic volumes reach the point where an upgrade to a dual carriageway is warranted, the provision of additional or upgraded ramps would be considered at that time.

2.2.3 Design suggestions

Submission number(s)

5, 12, 23, 66, 109, 153

Issue description

- Suggestion for other modifications to the design of the proposal, including:
 - There should be more opportunities for traffic to join the bypass and travel north
 - There should be a northbound entry ramp at Gowrie Gates and a right hand turn available to travel southbound
 - There should be a northbound exit ramp at Magpie Street to access the Industrial estate
 - The Maison Dieu intersection should be a T intersection
 - There should be additional climbing lanes on the bridge over the floodplain to allow for overtaking.

Response

For the proposal north of the Hunter River, there would not be a substantial benefit in providing opportunities for vehicles to join the bypass and travel north. Vehicles would be able to use the existing New England Highway, which would have reduced traffic volumes as a result of through traffic using the bypass.

South of the Hunter River, vehicles would have the option to join the bypass and travel north at Putty Road or use the existing New England Highway, which would have reduced traffic volumes with through traffic using the bypass.

Around the Gowrie Gates, the design of the proposal, including the connection and bridge, is restricted by the Main North railway line crossing the New England Highway. The constraint prohibits the inclusion of a safe right-turn from the New England Highway into the southbound entry ramp. Vehicles can continue using the existing New England Highway route or access the bypass via the southbound entry ramp at the northern connection located about 1.5 kilometres north of the Gowrie Gates connection.

Vehicles around the Gowrie Gates travelling north would travel on the existing New England Highway. These vehicles can then access the bypass via the northbound entry ramp at the northern connection located about 1.5km north of the Gowrie Gates connection. A northbound entry ramp to the bypass at this location is therefore not required. Traffic volumes on this section of the existing New England Highway would be reduced as a result of the proposal.

Vehicles travelling north on the bypass that wish to exit to access McDougalls Hill (including the industrial estate at Magpie Street) can exit the bypass at the northbound exit ramp at Gowrie Gates and travel west on Maison Dieu Road or north along the existing New England Highway towards Magpie Street. The northbound exit ramp at the Gowrie Gates connection is located about 1.5km south of the northern connection. A northbound exit ramp at the northern connection is therefore not required.

The Maison Dieu intersection has been designed as a roundabout to facilitate free-flow movements southbound along the New England Highway.

The assessment of heavy vehicle speeds only identified the need for the northbound climbing lane between the Hunter River and Rixs Creek Lane. Further information regarding overtaking opportunities is provided in Section 2.2.1.

2.2.4 Cyclist / pedestrian

Submission number(s)

3, 36

Issue description

- Concern that impact on cycling / pedestrians has not been considered
- Suggestion that dedicated cycling lanes should be included at the connections.

Response

The proposal would not provide any new pedestrian or dedicated cyclist facilities as the existing and anticipated pedestrian activity around Singleton is considered to be very low. However, pedestrian and cyclist safety and opportunities would be improved by the proposal as a result of the removal of through traffic within Singleton, including a large percentage of heavy vehicles.

The shoulders of the bypass would be sealed and generally be three metres (or 2.5 metres on the bridge over the floodplain) which would be suitable for on road cyclists.

The proposal would modify the shared path west of the Main North railway line bridge to pass through the southern entry ramp to the bypass at Gowrie Gates, and beneath the bridge over the New England Highway at Gowrie Gates.

2.2.5 Speed limits

Submission number(s)

29, 48, 69, 89, 122, 123

Issue description

- Suggestion the posted speed limit should be 100km/h
- Suggestion the posted speed limit should be 110km/h
- Suggestion for a lower posted speed limit.

Response

Speed zones of 110km/h are only used on divided highways as identified in the Transport speed zoning guidelines (RTA, 2011). As the proposal is designed as an undivided road, it has a posted speed limit of 100km/h, which is consistent with other sections of the New England Highway. The posted speed limit would allow for the efficient operation of traffic flows along the bypass.

2.3 Justification

2.3.1 Cost – benefit

Submission number(s)

1, 2, 3, 40

Issue description

- Concern that a cost-benefit analysis is not included in the REF
- Concern the cost of the proposal is not justified.

Response

The proposal meets the proposal objectives, whilst designing for low maintenance and is economically viable. The proposal's benefit-cost ratio is estimated as 1.6, with a seven per cent first year rate of return and an internal rate of return of 11 per cent. This is detailed in Table 23 of the *Preferred Option Report* (Roads and Maritime 2016).

It should be noted that Section 8 of the REF incorrectly stated that the benefit-cost ratio is estimated as 1.3, with a six per cent first year rate of return and an internal rate of return of nine per cent.

2.3.2 Route design

Submission number(s)

1, 3, 16, 19, 28, 68, 71, 109, 116, 117, 136, 144

Issue description

- Concern regarding the bypass route selection
- Suggestion that the Golden Highway would be a better route option for the proposal
- Suggestion that the proposal should connect to the Golden Highway or further to the south

- Suggestion that 'Option A' considered in the *Preferred Option Report* (Roads and Maritime, 2016) or options further to the west are a more desirable route
- Suggestion that the proposal should connect to the dual carriageway north of Rix's Creek
- Suggestion that the proposal should terminate at the new Maison Dieu Road roundabout
- Suggestion that the proposal should follow the Main North railway line.

Response

The assessment and selection of the bypass route option was subject to a separate process which is described in the *New England Highway Singleton Bypass Options Assessment – Route Options Identification Report* (Roads and Maritime, 2015) and the *Preferred Option Report* (Roads and Maritime, 2016). A summary is provided in Section 2.4.1 of the REF.

Alternative connection points assessed in the route options process included:

- Route Option A which involved a connection further to the south and a northern endpoint at Maison Die Road
- Route Option C which included a connection further to the north at Rixs Creek.

The Preliminary Feasibility Assessment Report (AECOM, 2013) included a corridor identification process which highlighted multiple corridors which could address the objectives of the proposal. Corridor options utilised the Golden Highway as well as more central corridor options following the Main North railway line.

For further detail regarding why these options were not progressed refer to Section 2.4.1 of the REF and the route and corridor options documents identified above.

2.3.3 Alternate option

Submission number(s)

1, 2, 148

Issue description

- Suggestion that implementing a park and ride system or facilitating carpooling as an alternative to the proposal
- Suggestion that traffic issues could be solved through the implementation of buses for those employed in mining.

Response

One of the main aims of the proposal is removing freight traffic from Singleton, which has dispersed origins and destinations. Whilst the suggestions above may be effective for vehicle movements with common origins and destinations (such as individual trips to employment centres), this can be (and to some degree, already is being) implemented right now and is not reliant on the bypass. The implementation of a park and ride system or buses for miners would not address the objective of removing heavy vehicles from travelling through Singleton.

2.3.4 Proposal objectives

Submission number(s)

3

Issue description

- Concern that the objectives are not adequate
- Concern that the proposal objectives in the REF conflict with the objectives in the traffic assessment
- Concern that objectives relate only to traffic.

Response

The objectives of the proposal include:

- Improve travel reliability on the New England Highway through Singleton, particularly for road freight supporting the Upper Hunter and the North West New England region
- Improve the amenity of Singleton by removing freight traffic
- Improve road safety for through and local traffic in Singleton
- Support future traffic growth along the New England Highway associated with planned land use in the Upper Hunter area
- Provide access for oversize over mass vehicles along the New England Highway.

The objectives were developed based on the objectives of the following Australian and State government strategic documents:

- Australian Infrastructure Plan (Infrastructure Australia, 2016)
- Future Transport Strategy 2056 (NSW Government, 2018)
- State Infrastructure Strategy 2018 – 2038: Building Momentum (Infrastructure NSW, 2018)
- Premier's Priorities 2015 – 2019 (NSW Government, 2015)
- NSW Freight and Ports Plan 2018 – 2023 (Transport for NSW, 2018a)
- Road Safety Plan 2021 (Transport for NSW, 2018b)
- New England Highway Draft Corridor Strategy (Transport for NSW, 2016)
- Hunter Economic Infrastructure Plan 2013 (Hunter Development Corporation, 2013)
- Upper Hunter Strategic Regional Land Use Plan (NSW Department of Planning and Infrastructure, 2012)
- Singleton Land Use Strategy (Singleton Council, 2008).

The relevance of the documents outlined above is described in Section 2.1 (Strategic need for the proposal) of the REF. The proposal objectives are considered to be consistent with the objectives of these documents.

The proposal is a road infrastructure project and therefore it is considered appropriate that the objectives primarily relate to traffic outcomes.

The objectives in the traffic assessment are considered to be consistent with the proposal objectives. However, the proposal objectives were revised to come into line with objectives from other specialist reports and it is noted that the revised proposal objectives were not updated in the traffic assessment.

2.3.5 Funding

Submission number(s)

8, 46, 47, 56, 71, 131, 142

Issue description

- Concern regarding funding commitments
- Concern that the revenue generated from the Upper Hunter is not being used to benefit the region.

Response

The New England Highway is a major freight and commuter route forming part of the Sydney to Brisbane Corridor of the National Land Transport Network and the primary route connecting the Upper Hunter with Maitland and Newcastle. One of the key needs of the proposal is to address traffic flow issues along this important road network, particularly for freight vehicles supporting the Upper Hunter and the North West New England region.

The funding of infrastructure projects is the responsibility of the State and Australian Governments. Prioritisation of a project is based on the merits of a project's business case. Revenue generated from company tax and royalty payments, funds essential services and infrastructure for communities across Australia.

2.4 Other

2.4.1 Support

Submission number(s)

4, 9, 27, 36, 42, 60, 61, 62, 70, 72, 83, 89, 90, 94, 95, 101, 108, 124, 126, 128, 129

Issue description

- General support for the proposal regarding:
 - Reduced traffic on John Street
 - Reduced traffic congestion
 - Reduced travel times
 - Increased road safety.

Response

The support for the proposal is noted.

2.4.2 Support (conditional)

Submission number(s)

15, 16, 38, 56, 69, 74, 76, 78, 82, 106, 110, 113, 115, 116, 144

Issue description

A number of submissions provided support for aspects of the proposal identified below but raised other concerns which are captured elsewhere in this report.

- General support for the idea of a bypass for the following benefits:
 - Reduced traffic
 - Reduced travel times

- Increased safety
- Other aspects of the proposal are supported including:
 - Route selection
 - Location
 - Design.

Response

The support for the aspects of the proposal identified above are noted.

2.5 Property and land use

2.5.1 Land use

Submission number(s)

1, 3

Issue description

- Concern that the bypass conflicts with the RU1 (Primary Production) land use objectives
- Concern the following land use impacts are not considered in the REF:
 - Access to commercial areas in John Street
 - Ongoing viability of businesses
 - Impact to the market gardens.

Response

Impacts to land use zones and their objectives under the Singleton Local Environment Plan 2013 (Singleton LEP 2013) are discussed in Section 4.2.1 of the REF. Most of the land within the proposal area is zoned RU1 (Primary production). The objectives of this zone under the Singleton LEP 2013 are to encourage diverse and sustainable primary industry production, to minimise the fragmentation of resource lands and to minimise conflict between land uses.

Clause 94 of the State Environmental Planning Policy (Infrastructure) (ISEPP) overrides the requirement for development consent from Singleton Council and therefore the consent requirements of the Singleton LEP 2013 do not apply. However, the land uses prescribed by the Singleton LEP 2013 were considered in development of the proposal.

The proposal has been designed to minimise the extent of land fragmentation where possible. However, the proposal would involve the acquisition of some properties zoned and used for agricultural purposes. Impacts to agricultural land are further discussed below in Section 2.5.2.

Access to John Street is discussed in the context of the Putty Road connection in Section 2.2.2. Potential impacts to business are assessed in Appendix D (Socio-economic impact assessment) of the REF.

When operational, the proposal has the potential to impact local businesses along the existing New England Highway corridor within Singleton due to the diversion of traffic around the town. Businesses along John Street are already bypassed under existing road network conditions. Surveys of local businesses and commuters carried out as part of investigations for the proposal identified that the overall impact to businesses is considered to be minor.

Once operational, effects on businesses in Singleton are expected to include the support of new business development opportunities. This may facilitate land use changes on George Street.

The proposal facilitates access to existing and potential future commercial land uses around the northern connection.

Potential impacts to the market gardens are described in Section 4.1.

2.5.2 Impact to agricultural land

Submission number(s)

3, 18, 149

Issue description

- Concern that the proposal removes, fragments and/or sterilises agricultural land.

Response

Impacts to agricultural land are discussed in both Section 6.11 (Property and land use) and 6.12 (Socio-economic) of the REF. The landowner surveys completed for the proposal (refer to Section 4.3) identify many landowners that would be impacted by the proposal.

The proposal would require the acquisition of agricultural land within the proposal area. Where possible, impacts to agricultural land have been minimised through the options selection and design of the proposal. However, acquisition would result in the fragmentation of eight properties, which are primarily agricultural properties.

The proposal would only occupy about 0.006 per cent of land used for agricultural purposes within the Singleton local government area and therefore the impact to the agricultural sector within Singleton is considered minor.

Transport would continue to consult with the affected landowners regarding potential impacts associated with land fragmentation, including the need for provision of alternate access where required. All land subject to fragmentation impacts, with the exception of one, is located in the southern section of the proposal. At this location potential fragmentation impacts would be reduced by providing access under the proposed bridge over the floodplain.

Transport would also consult with affected landowners with concerns of impacts to land use on their property (ie sterilisation of agricultural land).

2.5.3 Property value

Submission number(s)

5, 20, 117

Issue description

- Concern regarding impact to property values at an approved residential development at Singleton Golf Club as a result of noise impacts
- General concern regarding the devaluing of properties.

Response

Transport acknowledges that the proposal may indirectly impact on neighbouring or nearby properties. Concern regarding property values was raised in the landowner surveys completed for the proposal as summarised in Section 4.3.

Many aspects influence property values such as location and use. Transport acknowledges that the proposal affects land owners directly impacted through acquisition and may indirectly impact on neighbouring or nearby properties.

Transport would continue to consult with neighbouring landholders and the broader community throughout the detailed design and construction phases in order to manage potential indirect impacts. Directly affected landowners are encouraged to contact the Transport project team to discuss their circumstances and property impacts, including the process of acquisition.

Appropriate compensation would be negotiated in line with the Land Acquisition Information Guide (Roads and Maritime, 2014) and the *Land Acquisition (Just Terms Compensation) Act 1991*.

2.5.4 Acquisition

Submission number(s)

5

Issue description

- Request for further information regarding land acquisition at the approved residential development at Singleton Golf Club.

Response

As detailed in Section 3.6 (Property acquisition) of the REF the proposal would involve partial and total acquisition of property located within the proposal area and it is acknowledged this would impact affected property owners. Transport would continue to consult with all directly affected landholders during the detailed design stage when property acquisition requirements are confirmed.

Most property acquisition for the proposal is scheduled to start after environmental approval of the proposal, subject to funding being made available. All property acquisition would be carried out in accordance with the Land Acquisition Information Guide (Roads and Maritime, 2014) and the *Land Acquisition (Just Terms Compensation) Act 1991*.

2.5.5 Planned future development

Submission number(s)

3, 5, 8, 109, 121

Issue description

- Concern regarding impact to future residential development along the bypass route
- Concern regarding impact to potential future residential land use at Singleton Heights and at Whittingham
- Concern regarding impact to potential future commercial land at the northern connection
- Request that the new realigned Maison Dieu Road at Gowrie Gates facilitates access into the approved development at Singleton Golf Club
- Suggestion for provision of service stations along the bypass.

Response

An objective of the proposal is to support future traffic growth along the New England Highway associated with planned land use in the Upper Hunter area.

The Singleton Land Use Strategy (Singleton Council, 2008) considered in Section 3.1.2 of the REF noted that designation of a suitable bypass route would assist in future planning in Singleton, particularly in relation to the location and layout of future residential and commercial land.

Traffic modelling has considered potential increased traffic movements associated with planned residential development in Singleton Heights. The proposal would not preclude this development but would assist in resolving traffic congestion experienced at the New England Highway / Bridgman Road intersection. The Singleton Land Use Strategy (Singleton Council, 2008) does not include residential development at Whittingham.

Transport would continue to consult with neighbouring landholders and the broader community throughout the detailed design and construction phases, in order to manage potential indirect impacts.

The provision of service stations along the bypass is outside the scope of the proposal. There is the opportunity for the development of services stations by private proponents, subject to assessment and approval from Singleton Council.

2.6 Traffic

2.6.1 Traffic congestion

Submission number(s)

7, 10, 43, 45, 54, 55, 56, 58, 65, 69, 78, 82, 93, 107, 113, 143, 146

Issue description

- Concern that the bypass will not attract enough traffic
- Concern that a single lane design does not address current congestion issues
- Concern with traffic flows along the bypass
- Concern that anticipated traffic volumes on the bypass may be greater than anticipated when considering traffic from Dunolly Road, John Street and Putty Road.

Response

The outcomes of the traffic modelling for the proposal are summarised in Chapter 6.5 (Traffic and transport) of the REF.

Traffic modelling completed for the proposal indicated that the proposed bypass would attract up to 1200 vehicles per hour from the existing New England Highway during the morning and evening peak periods. Traffic choosing to bypass Singleton would experience a reduced travel time between the north and south extents of the network by over five minutes. This is a considerable benefit, therefore it is considered likely that through traffic would opt to use the bypass for travel time savings and reduced congestion.

Overall, it was considered that the bypass provided significant relief to the town of Singleton in terms of traffic reduction while improving journey times for New England Highway traffic.

Issues regarding congestion as a result of a single carriageway design are addressed in Section 2.2.1. The bypass has been designed to operate efficiently for existing and projected traffic volumes through to 2046, allowing for future traffic growth.

The traffic modelling includes traffic movements from Dunolly Road, John Street and Putty Road (and all other relevant roads) which are anticipated to use the bypass.

2.6.2 Traffic assessment

Submission number(s)

2, 3, 22

Issue description

- Concern regarding data used in the traffic assessment, including that future projections are overestimated
- Concern regarding the methodology for the origin and destination survey and that movements associated with internal employment patterns were not captured
- Concern that the traffic study was carried out seven years ago.

Response

Determining appropriate traffic growth for the assessment period of the scheme was a critical element of the modelling process, which included review of historic data and forecast development information. Singleton and the surrounding area are covered by a number of planning documents and studies which take into consideration population, employment and freight forecasts in the broader area which were built into the traffic model.

Further information on the process undertaken to identify future projections data is provided in Appendix L (Traffic assessment) of the REF.

The origin and destination survey aimed to capture detail regarding through trips. The origin and destination survey collected data in 15 minute intervals between 5am and 9:30am and between 3pm and 7pm. Assessing through trips aligns with the objectives of the proposal to remove through traffic from Singleton.

The survey and counts of existing traffic volumes used in modelling for the proposal were carried out primarily in 2018. Older traffic counts were used to verify and validate the historic and future growth rates.

2.6.3 Traffic modelling

Submission number(s)

3

Issue description

- Concern regarding traffic assessment including:
 - Modelling does not consider the regional scale and impacts to non-local journey times
 - Modelling does not consider induced demand
- Concern that travel time savings are minimal
- Concern that the intersection of the New England Highway and Bridgman Road will experience congestion with or without the proposal.

Response

The traffic assessment considered locally generated traffic and vehicle movements through Singleton, including regional freight movements.

Induced demand occurs when, as a result of improvements to the road network, more people choose to use a private vehicle where they would otherwise use an alternative form of transport, such as public transport. As identified in Section 6.5.1 of the REF, there is a very low reliance on public transport in Singleton, with public transport accounting for less than one per cent of commuter trips. Therefore, any induced demand as a result of the proposal is likely to be negligible.

With the bypass proposed to have a posted speed of 100km/h, the travel time savings for through traffic that switch from the New England Highway to the bypass are forecast to range from about six minutes to nine minutes in 2026 and 2036, respectively.

In addition, improvements in the local area (along John Street / Queen Street) as a result of the bypass are forecast to provide savings of about four minutes for northbound traffic on John Street in 2036.

The travel time improvements, along with the other benefits of the proposal including the improvement of road safety along the New England Highway through Singleton and the support of improved freight movements, result in a substantial overall benefit associated with the proposal.

Congestion issues at the Bridgman Road / New England Highway intersection are identified in Section 3.1.6 of Appendix L (Traffic assessment) of the REF. The congestion issues are typically due to the volume of traffic leaving Singleton Heights in the morning. The proposal would reduce traffic volumes on the New England Highway, providing more opportunity for traffic to leave Singleton Heights, and ease congestion at this intersection.

2.7 Flooding and water quality

2.7.1 Flooding (design)

Submission number(s)

1, 3, 19, 112

Issue description

- Suggestion that the route should be immune to all flood events including the Probable Maximum Flood (PMF)
- Concern that the flood models do not provide enough detail
- Suggestion that the bridge over the floodplain be an embankment to protect Singleton during floods.

Response

Across the broader floodplain area, the New England Highway currently experiences a level of flood immunity somewhere between the 10 per cent Annual Exceedance Probability (AEP) and five per cent AEP. To reduce the potential adverse flood impacts on the Singleton township and surrounding properties, resulting from the construction of the proposed bypass, mitigation measures aimed at maintaining the current level of flood immunity for the township and properties have been investigated.

Typically roads are designed to consider the 20 per cent and / or the one per cent AEP. The flood immunity of the bypass route is well in excess of a one per cent AEP. Larger flood events including the PMF are considered to assess the integrity of the structure as opposed to providing flood immunity.

All outputs from the flood modelling are provided in Appendix A of Appendix J (Surface and groundwater assessment) of the REF. Peak flood level and flood velocities are modelled for a range of flood events (20 per cent AEP, 10 per cent AEP, five per cent AEP, two per cent AEP, one per cent AEP, 0.5 per cent AEP and 0.2 per cent AEP). The outputs of the flood model can be viewed on the interactive portal, and show both the existing and proposed flood levels within the proposal area.

The design of the bypass has aimed at maintaining the existing flood regime and minimise flooding impacts associated with the construction and operation of the bypass. The section of the bypass across the Hunter River floodplain south of Putty Road has been designed as a bridge to achieve this. The construction of this section of the bypass as an embankment would result in unacceptable flooding impacts to properties around Glenridding.

2.7.2 Flooding

Submission number(s)

2, 3, 99, 117, 147, 149

Issue description

- Concern regarding the adequacy of the flooding assessment including assumptions and outcomes relating to flood modelling
- Concern that the flooding assessment has not used data from Singleton Council's updated Flood Study
- Concern around the use of the term "flood immunity" when the proposal is not immune to all flood events
- Concern that the flood impacts described in the REF are limited to the proposal and not the whole road network
- Concern that future climate change implications on flood events have not been considered
- Concern that the flood evacuation routes are not considered in the REF
- Concern that the southern approach near Whittingham would be blocked during moderate flooding
- Concern regarding impacts to flooding at Glenridding
- Concern regarding flooding at Rose Point Park.

Response

Transport has carried out detailed flood investigation and modelling to understand the potential flood impacts of the proposal. The flooding assessment was based on the Singleton Flood Model, which was used and calibrated as part of the Singleton Flood Study completed by BMT WBM on behalf of Singleton Council in 2003. Since the 2003 flood study, the Singleton Flood Model has been updated to include more recent topographic data and re-calibrated with the June 2007 flood event. Further information is provided in Section 2 of Appendix A of Appendix J (Surface and groundwater assessment) of the REF.

Flood immunity is a standard term used in flooding assessments. The REF uses the term flood immunity in the context of particular flood events.

The REF assesses impacts as a result of the proposal. The consideration of existing flooding impacts for the wider road network are outside the scope of the REF.

Potential impacts of climate change on flooding is considered in Section 6.14.3 of the REF.

Flood evacuation routes are discussed in Section 6.2.3 of the REF. Flood modelling indicates that the proposal would increase and decrease the peak flood level in different locations. While the proposal would not substantially decrease peak flood levels in any location, the infrastructure for the proposal would provide an additional flood evacuation route in the event of an early warning flood evacuation for Singleton. The proposal would also improve local accessibility during a flood event.

The proposal design does not impact the overall duration of flood inundation, but potentially changes localised drainage following the recession of a flood. The proposal could benefit the region and community by providing improved flood immunity of the affected section of the New England Highway and local accessibility during a flood event.

All approach roads for the proposal have been designed to have a five per cent AEP flood immunity level. This is considered to be an appropriate level of flood immunity (for reference, the June 2007 flood was around a five per cent AEP flood event).

The New England Highway south of the southern connection near Whittingham is inundated in a 20% AEP flood event under existing conditions. The entry and exit ramps at the southern connection would be inundated between the five per cent and two per cent AEP events (which is not considered to be 'moderate' flooding). In a five per cent AEP event under emergency arrangements, vehicles within Singleton would have the option of travelling south to the southern connection and connecting to the bypass via the northbound entry ramps. This would provide an additional emergency northbound evacuation route under this flood scenario.

Potential flooding impacts at Glenridding would be negligible given the design of the bridge over the floodplain at this location. Impacts would be limited to around the Putty Road connection and the southern connection, where Transport would acquire potentially impacted properties.

The Rose Point floodway is an important local flow path within and adjacent to the proposal area, which conveys floodwaters from the Hunter River west of the Putty Road connection, through culverts under the Main North railway line to Rose Point Park in the east. The proposal would not change peak flood levels at Rose Point Park for the five per cent or one per cent AEP event. The proposal would result in a slight increase in flood velocities upstream of the Rose Point floodway and a slight decrease in flood velocities at Rose Point Park. Refer to Section 6.2.3 of the REF for further information.

2.7.3 Water quality

Submission number(s)

4

Issue description

- Notes surface water quality monitoring will need to be carried out prior to the start of site works to document the natural fluctuations in background water quality

- Notes that the spill containment system is essential to protect water quality in the Hunter River in the event of a chemical or fuel spill.

Response

The comments are noted. Transport will conduct a water quality monitoring program prior to the start of construction.

A range of mitigation measures to manage potential water quality impacts during construction are provided in Section 6.2.4 of the REF. These mitigation measures will be included as part of the Construction Environment Management Plan (CEMP) and will include a Soil and Water Management Plan. A Spill Management Plan will also be prepared and implemented as part of the CEMP.

2.8 Road safety

2.8.1 White Falls Lane

Submission number(s)

21

Issue description

Concern regarding road safety at the New England Highway / White Falls Lane given the realignment of Newington Lane.

Response

There would be a minor increase to traffic volumes using the New England Highway / White Falls Lane intersection. However, the proposal is anticipated to result in an overall safety improvement at this location, given that traffic volumes on this section of the New England Highway would be reduced as through traffic uses the bypass.

The intersection layout would be reviewed during the detailed design component of this proposal.

2.8.2 Safety features

Submission number(s)

49, 64, 99

Issue description

- Concern regarding painted median only on the bridge over the floodplain and no wire rope or other barrier
- Suggestion for clear lighting and signage for safety reasons.

Response

The proposal has been designed to appropriate Australian Standards including Guide to Road Design – Austroads (Austroads, 2019). It is noted that, given the separation distance between travel lanes (one metre median), a wire rope is not required. This is consistent with the approach for the New England Highway corridor, and what has recently been constructed at Scone.

Lighting and signage would be designed in accordance with relevant guidelines and standards for safety including *Lighting of grade separated interchanges* (Roads and Maritime Services, 2014) to minimise light spillage into residential properties as well as

glare that could impact on driver visibility. Lighting would be further refined during the detailed design phase.

2.9 Construction

2.9.1 Staging

Submission number(s)

3, 5, 144

Issue description

- Suggestion to deliver different parts of the proposal in discrete stages to reduce costs
- Suggestion that elements of the proposal at the Gowrie Gates should be delivered ahead of the rest of the proposal to provide certainty for a nearby residential development.

Response

The construction of the proposal would be staged according to primary construction activities (refer to Table 3-3 of the REF). As the construction of the proposal at different locations is interrelated (eg excavated material at one location may be required as fill material at another location), the completion of certain elements of the proposal ahead of others could be an inefficient approach and would result in increased construction costs and extend the duration of potential construction impacts.

There is potential for some early works to be completed ahead of time. This would be reliant on funding being available, and in coordination with detailed design and availability of materials.

2.9.2 Portal

Submission number(s)

61

Issue description

- Queries use of the online portal during construction.

Response

The online portal has been a great platform for engaging with the local community and stakeholders. Transport would certainly consider using the online portal throughout the construction period as a means of information transfer and engagement.

The project website would continue to be updated to provide the local community and stakeholders with ongoing information.

2.9.3 Timing

Submission number(s)

67

Issue description

- Queries timing for commencement of construction.

Response

Timing for construction of the proposal has not been confirmed and is subject to approval and funding availability.

2.9.4 Resource use

Submission number(s)

118

Issue description

- Suggestion that excess excavated material is made available for other projects.

Response

All surplus or contaminated material would either be classified and disposed of at a licensed waste facility in accordance with EPA Waste Classification Guidelines (EPA, 2014) or reused in accordance with EPA resources recovery orders and exemptions. Transport would consult relevant stakeholders regarding potential reuse opportunities at the time of construction.

2.10 Air quality

2.10.1 Carbon emissions

Submission number(s)

1, 3

Issue description

- Concern that the proposal encourages the use of cars rather than public transport which results in greater emissions
- Concern that carbon emissions as a result of the bypass have not been calculated or discussed adequately
- Suggests the bypass should be designed to be carbon neutral (fully offset carbon emissions).

Response

The proposal would cater for a projected growth in traffic volumes which would occur independent of the proposal. The proposal does not encourage the use of cars but rather creates a safer and more efficient road network for existing road users. The use of public transport is separate to and outside the scope of this proposal.

Impacts associated with climate change including the emission of greenhouse gases (GHG) (ie carbon emissions) were assessed in Section 6.14 (Climate Change) of the REF.

The construction of the proposal would result in some unavoidable emissions of GHG associated with the use of construction equipment, however overall emissions are anticipated to be negligible. Measures are described in Table 6-67 of the REF to minimise GHG emissions during construction.

Traffic volumes would not increase as a result of the proposal and there is not anticipated to be an increase in vehicle emissions. Specific calculation of carbon emissions is therefore not required.

The proposal would enable traffic to continue at a more consistent speed rather than slowing and increasing speed when travelling through the town of Singleton. This would result in a more efficient use of fuel.

2.10.2 Dust emissions

Submission number(s)

4

Issue description

- Suggestion that measures to minimise dust must be implemented.

Response

A range of air quality mitigation measures to manage potential dust impacts during construction are provided in Section 6.9.4 of the REF. These mitigation measures will be included as part of the CEMP.

2.11 Biodiversity

2.11.1 Vegetation/habitat removal

Submission number(s)

1

Issue description

- Concern about the loss of habitat from the proposal including Central Hunter Valley eucalypt forest.

Response

Impacts associated with biodiversity and the loss of habitat are assessed in Section 6.1 (Biodiversity) of the REF. The Central Hunter Valley eucalypt forest and woodland critically endangered ecological community (CEEC) was considered likely to be significantly impacted by the proposal, within the meaning of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). No other threatened species, ecological communities or their habitats were considered likely to be significantly impacted by the proposal.

The proposal triggers offsetting requirements for one EPBC Act listed ecological community, one *Biodiversity Conservation Act 2016* (BC Act) listed ecological community and three BC Act threatened species credit species habitats, as listed in Section 6.1.5 of the REF. A preliminary Biodiversity Assessment Methodology credit calculator assessment determined credit requirements as outlined in Table 6.8 in the REF.

Transport will carry out a Strategic Assessment for the Central Hunter Valley eucalypt forest and woodland CEEC under an agreement with the Department of the Environment and Energy (DoEE). Transport would, as part of detailed design, reduce impacts where possible to this CEEC and residual impacts would be offset through the retirement of biodiversity credits.

Fulfilling offset requirements under the BC Act may be achieved by Transport using one or more of the offset strategies outlined in Section 6.1.5 of the REF.

2.12 Contamination

2.12.1 PFAS contamination

Submission number(s)

4, 19, 149

Issue description

- Suggestion that areas potentially contaminated with Per- and Poly-Fluoroalkyl Substances (PFAS) must be managed in accordance with the guidance provided by the PFAS National Environmental Management Plan (NEMP) (Heads of EPAs Australia and New Zealand, 2018)
- Concern over the lack of detailed information around damage to aquifers potentially contaminated with PFAS and spread of PFAS around Whittingham.

Response

Appendix K (Contaminated Soils Phase 1 Assessment) of the REF identified potential PFAS risk areas in proximity to the proposal. The nearest known PFAS contamination risk areas to the proposal are the Singleton Heights Mines Rescue Services (adjacent to the REF study area) and Singleton Military Area (around 500 metres outside of the southern section of the REF study area).

The EPA is currently investigating these areas. The Department of Defence has carried out an investigation into the potential presence of PFAS at Singleton Military Area (publicly available on the EPA website). A number of unregistered bores were sampled, including two bores in the southern section of the study area. PFAS concentrations in the two bores were below the NEPM drinking water and recreational use guidelines.

Transport understands that areas potentially contaminated with PFAS must be managed in accordance with the guidance provided by the PFAS NEMP (Heads of EPAs Australia and New Zealand, 2018).

It is further understood that a monitoring program would need to be developed in accordance with the NEMP, to test excavated material and intercepted groundwater for PFAS in areas that have been identified as potentially contaminated with PFAS.

During detailed design, Transport would identify PFAS contaminated risk areas to be targeted for further investigation during additional geotechnical studies and / or construction. This would provide further certainty into potentially contaminated areas and inform the proposal of potential risk to PFAS spreading into surrounding areas, including Whittingham.

As outlined in Section 6.3.3 of the REF, the pile holes for the bridge over the Hunter River would intersect the superficial alluvial aquifer. The installation of the pile holes would be conducted using the method identified in the REF to minimise the potential of encountering groundwater. If the area is considered potentially PFAS contaminated, then it would be managed in accordance with the NEMP as described above.

2.13 Environment Protection Licence (EPL)

2.13.1 EPL

Submission number(s)

4

Issue description

- Suggestion that the proposal will require an Environmental Protection Licence (EPL) for “Road Construction”, being above the threshold listed in section 35 of Schedule 1 of the Protection of the Environment Operations Act 1997
- Suggestion that consultation should continue with EPA during the detailed design and construction phases.

Response

Transport understand that an EPL for ‘Road Construction’ is likely to be required as the proposal is expected to involve a total cut of 557,250m³, as stated in Section 3.3.4 of the REF. This is above the threshold listed in Section 35 of Schedule 1 of the *Protection of the Environment Operations Act 1997*.

It is further understood that in developing the EPL, the EPA may require further information relating to specific environmental impacts that have been addressed only in a general nature in the REF due to the current stage of the design process.

Transport has been liaising with and would continue to consult with EPA during the detailed design and construction phases, and specifically prior to applying for an EPL, to minimise any potential delays to construction.

2.14 Heritage and landscape

2.14.1 Non-Aboriginal heritage

Submission number(s)

1, 3

Issue description

- Concern regarding removal of the heritage listed Singleton Pump Station
- Concern that the REF does not consider the impact to the historic subdivision pattern.

Response

The heritage assessment presented in Section 6.8 (Non-Aboriginal heritage) and Appendix C (Non-Aboriginal heritage assessment) of the REF included consideration of all heritage items listed on statutory registers. The heritage assessment has been carried out in accordance with the relevant guidelines including Assessing Heritage Significance, part of the NSW Heritage Manual (Heritage Branch, Department of Planning 2001).

The Former Pumping Station was included in the assessment. The Former Pumping Station has been decommissioned since 1934, and the Singleton Water Depot located south of the original pumping station remains active today.

A site inspection carried out on 28 March 2018 observed the Former Pumping Station to be in poor condition exhibiting rust with a boarded up and covered section, and

graffiti. Specific management measures have been recommended to maintain heritage aspects of the Former Pumping Station (refer to Section 6.8.4 of the REF).

The historic subdivision pattern within the proposal area is not considered to be a Heritage Conservation Area as shown on the Heritage Map in the Singleton LEP 2013. Therefore, the heritage assessment did not specifically assess the historic subdivision pattern. Potential impacts associated with the landscape character associated with the subdivision are assessed in Chapter 6.10 (Landscape character and visual impacts) of the REF.

2.15 Noise and vibration

2.15.1 Noise (construction)

Submission number(s)

117

Issue description

- Concern regarding night time construction noise including sleep disturbance.

Response

The noise and vibration assessment presented in Section 6.6 (Noise and vibration) of the REF included an assessment of the potential noise and vibration impacts associated with construction of the proposal.

The assessment predicted exceedances from construction activities both inside and outside of standard construction working hours, including exceedances of the sleep disturbance and awakening reaction criteria. Construction would largely be carried out during standard construction working hours (from 7am to 6pm Monday to Friday and from 8am to 1pm on Saturdays). Work generating high noise and/or vibration levels would be scheduled during less sensitive time periods, where possible.

Mitigation measures to manage impacts are provided in Section 6.6.5 of the REF including the preparation of a Construction Noise and Vibration Management Plan.

2.15.2 Noise (operation)

Submission number(s)

3, 4, 5, 20, 117

Issue description

- General concern regarding operational noise
- Concern that temperature inversions have not been considered in noise modelling
- Concern that the REF only identifies 89 noise sensitive receivers given much of the town is impacted by noise on the New England Highway
- Suggestion that the post-construction noise monitoring program be carried out in accordance with the NSW Road Noise Policy (DECCW, 2011)
- Concern that there is no noise wall on the western side of the bypass and that this will result in noise impacts to an approved residential development at Singleton Golf Club.

Response

The noise and vibration assessment presented in Section 6.6 (Noise and vibration) and Appendix M (Noise and Vibration technical report) of the REF included an assessment of the potential noise and vibration impacts associated with operation of the proposal. Predicted noise levels are based on a worst-case scenario and consider unfavourable weather conditions including temperature inversions.

Based on operational noise modelling, 89 sensitive receivers are considered to be eligible for the consideration of feasible and reasonable 'at property' noise mitigation measures to minimise operational noise. To confirm that the noise level targets are achieved, a post-construction noise monitoring program would be carried out in accordance with the NSW Road Noise Policy (DECCW, 2011).

The program would consider the implementation of feasible and reasonable noise mitigation at the 89 sensitive receivers identified to experience potential impacts as a result of the proposal. Addressing existing noise impacts associated with the operation of the existing New England Highway are outside the scope of the proposal.

A noise barrier assessment has been carried out as part of the operational road traffic noise assessment in accordance with the NSW Road Noise Policy (DECCW, 2011). Six noise barriers have been recommended as part of the proposal, subject to detailed design. In accordance with the NSW Road Noise Policy, only existing receivers are considered as part of the noise barrier assessment.

2.16 Visual impacts

2.16.1 Visual amenity

Submission number(s)

3, 20, 117

Issue description

- Concern regarding level of assessment for potential operational lighting impacts
- General concern regarding visual impact of the proposal
- Concern regarding impact to view of existing landscape character (countryside).

Response

A landscape character and visual impact assessment is presented in Section 6.10 (Landscape character and visual impacts) and Appendix B (Landscape Character, Visual Impact Assessment and Urban Design Objectives Report) of the REF.

Adjustments to existing lighting would be provided at the Putty Road connection, New England Highway connection at Gowrie Gates, and the northern connection adjacent to Magpie Street.

Lighting would be designed in accordance with relevant guidelines and standards for safety and to minimise light spillage into residential properties and minimise glare that could impact on driver visibility. Lighting would be further refined during the detailed design phase.

Vehicle headlights may also cause visual impacts at night. These impacts would be further considered during detailed design and where possible landscaping and noise barriers would be provided to minimise potential visual impacts from headlights. A headlight screen is currently proposed at the southern connection.

Elements of the proposal likely to be most visually intrusive once operational include the earth embankments, bridges and vehicle movements. A visual impact assessment was completed for seven viewpoints around Singleton. The proposal was considered to be visually prominent at three locations with existing views of the open agricultural floodplain. Potential visual impacts at the other viewpoints were generally considered low. Refer to Section 6.10.3 of the REF for further information.

The proposal would result in reduced traffic volumes through Singleton town centre which is likely to have positive impacts on visual amenity along the existing New England Highway. It is noted that changes resulting from the proposal would mainly affect residents and businesses adjoining the proposal area, and road users.

High to moderate impacts to landscape character as a result of the proposal are identified in Table 6-48 of the REF for three landscape character zones including the open rural landscape, agricultural landscape and Singleton Old Town. The urban design of the proposal has aimed to minimise potential landscape character impacts where possible. An Urban Design Plan will be prepared as part of the CEMP which will include measures for the implementation and monitoring of landscaping, which would reduce visual and landscape character impacts during construction and once the proposal is operational.

2.17 Outside scope

2.17.1 Road safety

Submission number(s)

3, 52

Issue description

- Concern that the bypass would not solve driver fatigue issues
- Concern regarding general road safety for the New England Highway.

Response

Driver fatigue is not typically caused and/or fixed by road design or road safety. This issue is outside the scope of this proposal.

The proposal aims to improve safety issues associated with the existing New England Highway through Singleton. The concerns raised relate to more general road safety issues which are also outside the scope of this proposal.

2.17.2 Other

Submission number(s)

6, 14, 99, 145

Issue description

- Correspondence unrelated to the public display of the REF incorrectly included as a submission
- Comments on project update wording and formatting.

Response

The submissions were related to separate communications between stakeholders and Transport and are outside the scope of this report. These comments would be

considered for future communications, however no changes to the existing project updates would occur.

2.17.3 Road safety – Whittingham

Submission number(s)

3, 8, 16, 19, 29, 69, 71, 75, 88, 116, 134, 144, 146

Issue description

- Concern regarding road safety of the New England Highway at Whittingham including Golden Highway / New England Highway intersection
- Suggestion that the proposal should fix these road safety issues.

Response

The concern from the community regarding this issue is noted.

Road safety issues for the New England Highway at Whittingham are beyond the scope of the current proposal.

The NSW Government has provided \$3.29 million in 2019/20 to plan and deliver road improvements to improve safety and reduce the risk of crashes along the highway between Newington Lane and the Golden Highway. This included a speed zone review which resulted in speed limit reductions which are now in effect.

Further information is available at <https://www.rms.nsw.gov.au/projects/new-england-highway/new-england-highway-safety-improvements-whittingham.html>

2.17.4 Project design

Submission number(s)

15, 16, 30, 37, 56, 63, 69, 75, 76, 97, 111, 121, 137, 140, 151

Issue description

- Suggestion to upgrade the New England Highway to dual lanes from Belford, the Hunter Expressway or other sections of the New England Highway which are currently dual carriageway or may be upgraded to a dual carriageway in the future
- Suggestion that the bypass should also bypass Muswellbrook
- Suggestion that the proposal should address road safety issues at Hermitage Road.

Response

Matters raised in these submissions are beyond the scope of the proposal.

3 Response to Singleton Council submission

A response to the submission from Council is provided in this section. The submission text is provided verbatim and the responses have been structured to be consistent with the structure of the submission.

3.1 Key issues

Table 3-1 Response to key issues from Singleton Council

Item	Issue	Response
1	<p>The proposed Putty Road interchange does not meet community needs. In particular access for emergency services is inadequate. Allowing traffic to move between the Southern interchange and the Putty Road interchange will save approximately 30 seconds per trip. The volume of trips undertaken by emergency services will be significant due to the proximity of the Putty Road interchange to the town centre as well as secondary emergency services attending from Rutherford to the south.</p> <p>The proposed Putty Road interchange provides inadequate access for council to access water assets and inadequate access for heavy vehicles to access the regional livestock market.</p> <p>The proposed interchange significantly limits the economic opportunities for our CBD. This is untenable to our community.</p> <p>The current design will also ensure that heavy vehicle traffic will continue through our town. This means amenity and safety opportunities will be missed.</p> <p>Singleton Council demands that a full interchange is installed at the Putty Road intersection allowing entry to and exit from the</p>	<p>As described in Section 6.5.2 of the REF, the assessment of operational traffic impacts considered the proposal with and without south facing ramps from Putty Road. The traffic assessment indicated insufficient traffic demand for the south facing ramps to justify the capital cost of their inclusion into the proposal. The additional ramps would cost around \$25 million. There is a high cost associated with the ramps given all structures would need to be elevated to minimise potential flooding impacts at this location.</p> <p>Survey data from the traffic assessment identified that traffic flows on the south facing ramps would be limited and only serve a relatively small number of trips e.g. trips from the New England Highway (south) to the Ryan Avenue shopping precinct. Locations to/from the southern end of Putty Road / Golden Highway would be expected to make use of Range Road rather than travel up to Singleton then head south. Refer to Section 6.2.1 of Appendix L (Traffic Assessment) for further information.</p> <p>Emergency services trips originating from Fire and Rescue NSW (John Street), Singleton Police Station (Hunter Street) or Singleton Ambulance Station (George Street) travelling to destinations in Singleton are unlikely to benefit from allowing the movement between the southern connection and Putty Road connection. Travelling south from within the town to join the southern connection and then north to Putty Road would likely result in an increase to travel times compared to using existing local roads to travel directly to the required destination.</p> <p>Given emergency vehicles can operate under sirens, journey times for these vehicles are likely to be reduced compared to traffic modelling. A modelled benefit of 30 seconds would be reduced for emergency vehicles and is therefore considered to be negligible.</p>

Item	Issue	Response
	<p>Bypass in both northbound and southbound directions.</p>	<p>Emergency services from Rutherford are anticipated to take around 40 minutes to reach Singleton and therefore a travel time benefit of up to 30 seconds is considered to be relatively negligible.</p> <p>Existing access arrangements for Council assets at Waterworks Lane would continue for the proposal.</p> <p>The nearest regional livestock market to Singleton is located at Gresford, around 36 kilometres to the east. The operation of the proposal would not change existing heavy vehicle access movements to Gresford.</p> <p>The Central Business District located on John Street is bypassed by the existing New England Highway / George Street and the proposal would not change this arrangement.</p> <p>Once operational the proposal has the potential to impact local businesses along George Street / New England Highway within Singleton due to the diversion of traffic around the town. Surveys of local businesses and commuters carried out as part of investigations for the proposal identified that the overall impact to businesses is likely to be minor.</p> <p>The surveys identified that a large portion of highway traffic does not stop in Singleton despite travelling through. With this through traffic removed, amenity impacts in Singleton may improve due to reduced vehicle volumes in town. Singleton would remain visible from the bypass, with signage encouraging traffic to continue to stop in town to access local businesses.</p> <p>A summary of case studies reviewed of the key issues affecting bypassed towns is provided in Section 4.1 of Appendix D (Socio-economic impact assessment) of the REF. Evidence from bypassed towns indicates that some highway dependent businesses have been able to reposition themselves and become sustainable in the longer term.</p> <p>The stated proposal aim is to remove freight traffic from Singleton that is not stopping within the town (through freight traffic). For the modelled 2026 scenario</p>

Item	Issue	Response
		<p>it is anticipated that the bypass would remove around 2000 heavy vehicle movements per day (based on modelled traffic volumes on the existing New England Highway south of Waddells Lane).</p> <p>Heavy vehicles are still required to travel throughout the town to service local businesses and would continue to do so when the bypass is operational. Heavy vehicles would include for example local garbage trucks, local suppliers, local tradesman and buses. It is anticipated around 1000 heavy vehicle movements per day would still be required into town (based on the modelled scenario described above). These vehicles would continue to access Singleton via existing access routes through the town, including along George Street / John Street / Ryan Avenue for businesses located on John Street. It is noted that Singleton Council has recently introduced a mass limit on Kelso Street to address this existing issue.</p> <p>The reduction of through freight traffic through the town would result in improved road safety in addition to the amenity impacts described above. Once operational, effects on businesses in Singleton are expected to include the support of new business development opportunities. This may facilitate land use changes on George Street.</p>
2	<p>The highway volumes, while suitable with one lane operation would offer a low level of service (LOS). Based on volume-demand-to capacity (V/C) ratio the road would operate at a LOS D in 2026 and 2036 and LOS E in 2046. LOS is a mechanism used to determine how well a transportation facility is operating from a traveller's perspective. Typically, six levels of service are defined and each is assigned a letter designation from A to F, with LOS A representing the best operating conditions, and LOS F the worst.</p>	<p>Transport has carried out detailed traffic investigation and modelling to understand the future traffic volumes and split between the existing highway and the proposed bypass. The modelling indicates traffic volumes on the bypass would not reach levels where a dual carriageway would be justified in the medium to long term. The <i>Austroads: Guide to Traffic Management</i> (Austroads, 2019) suggests a road of this kind has an hourly capacity of up to 1600 vehicles per lane before it becomes necessary to consider duplication. The predicted maximum peak hourly flow in 2046 (which allows for anticipated traffic growth) is 1100 vehicles per lane. At this stage the single lane bypass has reached only about 70 per cent of the total available capacity, demonstrating a single lane in each direction can meet the forecast demand for more than 20 years.</p>

Item	Issue	Response
	<p>Additionally, typically the shoulders are 3m side between the lane edge and face of the Wire Rope Safety Barrier (WRSB), however only 2.5m shoulders are proposed on bridges. Broken down large vehicles would likely impede traffic flow. The 1m wide centre line treatment may assist in vehicles being able to negotiate around a broken down vehicle however this then pushes oncoming vehicles closer to each other.</p> <p>Singleton Council requests that two lanes are installed in both directions along the length of the bypass. This will ensure the road operates at a satisfactory LOS both initially and into the future, and would provide adequate space for vehicles to negotiate around any obstructions such a broken down vehicle.</p>	<p>Level of Service (LoS) is not a metric typically used to measure traffic flow along a section of road. It is typically used to measure the performance of an intersection. As described above, traffic modelling has identified that a single carriageway would have adequate capacity to accommodate the anticipated traffic volumes using the bypass.</p> <p>The proposal is designed to generally have a one metre wide median and three metre wide shoulders (2.5 metres wide on the bridge over the floodplain). The width of the median and shoulder along the bypass allows for sufficient space for breakdowns, minor accidents and emergency vehicles to safely pass. In the event of a serious accident that requires the closure of the bypass, the existing route through Singleton would be a detour.</p>
3	<p>At the Gowrie Gates interchange, traffic on Maison Dieu Road wishing to travel south along the bypass, needs to travel north along Magpie Street to access the bypass. No left turn provision is made at the southbound on-load ramp as traffic is merging from 2 lanes into 1. This will become particularly relevant once the Singleton Growth Area GSA4 is developed forcing traffic to travel through the industrial area or through Singleton to travel south. The lack of provision may cause safety issues caused by drivers trying to turn left onto the southbound on-load ramp.</p> <p>There is little discussion in traffic report around why this has not been allowed for. It is unclear if the</p>	<p>A right turn movement onto the southbound entry ramp at the Gowrie Gates connection is not permitted. The detailed design of the proposal will include a median barrier to prevent this movement. The design allows for a safe left turn movement only.</p> <p>The right turn movement cannot be provided due to design and safety constraints given the proximity of the new intersection at Maison Dieu Road and the Gowrie Gates rail bridge.</p> <p>Vehicles travelling south from the Maison Dieu area have the opportunity to travel north and join the bypass at Magpie Street or use the existing New England Highway. The anticipated number of movements generated by land releases are unlikely to result in a noticeable impact to traffic flows on the bypass or existing New England Highway.</p>

Item	Issue	Response
	<p>right turn southbound movement from the New England Highway (NEH) is permitted, if it is there is a serious risk of crashes between drivers using the NEH wanting to join the bypass southbound ramp and drivers on Maison Dieu Road heading to Singleton.</p> <p>Additionally, the roundabout arrangement at this intersection appears to be overly complex and potentially confusing to motorists, a simpler layout could be provided, potentially with the use of traffic signals.</p> <p>Singleton Council requests that further consideration is given as to the layout of the Gowrie Gates interchange to provide adequate access to the bypass for all traffic and provide a less complex and potentially confusing intersection layout.</p> <p>Additionally, specific consideration to Singleton Council Land Release areas needs to be taken into account as ignoring, or adversely affecting, these areas may stifle growth of Singleton and not future proof the bypass.</p>	<p>Traffic signals were considered for the intersection of the Gowrie Gates connection northbound entry ramp, Maison Dieu Road and existing New England Highway. Traffic signals were not considered to be suitable given:</p> <ul style="list-style-type: none"> • The four intersecting roads are not perpendicular to each other which is generally required for traffic signals • Traffic signals prevent the free-flowing movement of traffic at the intersection. <p>A roundabout is therefore the most suitable design option that allows for a free-flow arrangement. The layout of the intersection would be considered further during detailed design. Appropriate directional signage would be included at the roundabout to for effective wayfinding.</p>
4	<p>The layout and operation of the intersection of Putty Road and Waterworks Lane requires clarification. The concept design indicates that chevron approaches are proposed on Putty Road which may prevent vehicles from turning right into, or out of Waterworks Lane. If the right turns are to be permitted there is a serious risk of crashes</p>	<p>The intersection of Putty Road and Waterworks lane has been designed in accordance with relevant design standards. Transport would refine the design of the intersection during detailed design in consultation with Council. The intent of the design is to provide all traffic movements for Council vehicles.</p>

Item	Issue	Response
	<p>between vehicles accessing Waterworks Lane and vehicles entering the right turn lane to access the bypass. Additionally, the drawings do not show if the proposed right turn lane is long enough to cater for the traffic expected to use the intersection. A large percentage of heavy vehicles are likely to use it - for a 70km/hr design speed this should be 180m long. Is Approach Sight Distance (ASD) achieved for the approach to the intersection from the bypass?</p> <p>Singleton Council requests to be fully involved in the traffic management planning for construction and that appropriate conditions are applied and enforced to minimise the impact on the community.</p>	
5	<p>Construction staging has not been supplied for review. Construction of the Maison Dieu Road leg will likely cause significant traffic disruption due to limited formation space. Traffic management requirements in the vicinity of schools during construction need to be considered. It is understood that at this stage of the project the construction staging and associated traffic management is still being developed.</p>	<p>A detailed construction traffic management plan will be prepared in accordance with <i>Traffic Control at Work Sites Manual Version 4</i> (RTA, 2010) and <i>Specification G10 - Control of Traffic</i>. The plan will include site specific traffic control measures (including signage) to manage and regulate traffic movement. The proximity of construction traffic routes to schools would be considered as part of the site specific control measures.</p> <p>The plan will be approved by Transport before implementation to provide a comprehensive and objective approach to minimise potential impacts on road network operations during construction. The traffic management plan would be provided to Council prior to the final approval of the plan.</p>
6	<p>The Economic Analysis that has been undertaken is primarily concerned with construction economic impacts however the economic impacts beyond construction activities need to be assessed. As a</p>	<p>The assessment of socio-economic impacts in Appendix D (Socio-economic impact assessment) of the REF was carried out in accordance with Environmental Impact Assessment Practice Note – Socio-economic assessment (Roads and Maritime, 2013).</p>

Item	Issue	Response
	<p>minimum, it needs to consider issues including but not limited to socio economic impacts such as emergency access, community connectedness, our CBD and tourism.</p> <p>It is understood that the surveys described in the REF identify that a large portion of highway traffic does not stop in Singleton despite travelling through and that with this through traffic removed, amenity impacts in Singleton may improve due to reduced vehicle volumes in town. Singleton would remain visible from the bypass, with signage encouraging traffic to continue to stop in town to access local businesses.</p> <p>Singleton Council requests that additional economic analysis is undertaken considering, as a minimum, socio economic impacts including but not limited to emergency access, community connectedness, our CBD and tourism. as emergency access and tourism.</p>	<p>Section 7 of Appendix D (Socio-economic impact assessment) of the REF provides an assessment of a range of operational impacts including potential impacts to:</p> <ul style="list-style-type: none"> • Property • Amenity • Transport and access • Social infrastructure • Business impacts. <p>Emergency facilities are identified throughout the assessment. Given the proximity of the bypass to emergency facilities (refer to item 1 above) potential impacts to access to these facilities are considered to be negligible and therefore not discussed in detail in the REF.</p> <p>Impacts to community cohesion are considered in the context of property acquisition in Section 7.1 of Appendix D (Socio-economic impact assessment) of the REF.</p> <p>Operational impacts to businesses are assessed in Section 7.5 of Appendix D (Socio-economic impact assessment) of the REF. The contribution of the tourism sector to local businesses is considered throughout the assessment, including as part of the business surveys completed for the proposal.</p> <p>Transport will engage with Singleton Council and local businesses regarding the progress of the proposal to allow businesses time to prepare for changed traffic conditions through the town.</p> <p>Council's comments regarding improved amenity and signage are noted.</p>

3.2 Road design issues

In Table 3-2 below, Council has raised a number of specific road design issues and queries.

It should be noted that the REF has been developed to communicate the key components of the concept design for the proposal and to assess potential environmental impacts associated with design.

An overview of key design criteria provided in Table 3-2 of the REF. The REF is not intended to be a design report and as such it does not provide a high level of detail regarding specific design criteria. As a result the figures in the REF are indicative and are not intended for design review.

The design has been carried out in accordance with relevant design standards. The design would continue to be refined during detailed design in accordance with relevant standards and in consultation with Council.

Table 3-2 Response to road design issues from Singleton Council

No.	Location	Drawing/ Document No.	Issue	Response
1	Newington Lane	Figure 3.2	<p>There is a lack of detail regarding the treatment of the existing Newington Lane and New England Highway (NEH) intersection. Will this be fenced and /or landscaped to prevent vehicles taking short cuts onto / from Bypass?</p> <p>Council requests further information in regards to this element of the design.</p>	Both a barrier and the level difference between lanes at this location would prevent this movement.
2	REF – Section 3.22 Engineering Constraints	Table 3-2 Design Criteria	<p>Design criteria for ancillary roads / existing NEH works have not been provided.</p> <p>Council requests further Information in regards to this element of the design.</p>	Refer to general response at the start of Section 3.2.
3	REF – Section 3.22 Engineering Constraints	Table 3-2 Design Criteria	<p><i>Posted speed New England Highway:</i> <i>100km/h</i></p> <p>The design speed not provided, typically design speed is 10kph higher than posted speed. 100kph posted speed is consistent with existing posted speed south of Bypass. Northern end of Bypass connects to NEH in an 80kph speed zone.</p> <p>Council requests clarification as to the design speed.</p>	<p>The posted speed on the bypass would be 100 kilometres per hour. The design speed is typically 10 kilometres an hour higher than the posted speed.</p> <p>The 80 kilometre per hour speed limit at Rixs Creek would not change for the proposal.</p>
4	REF – Section 3.22	Table 3-2 Design Criteria	<p><i>Lane width (through lanes):</i> <i>3.5 metres (minimum)</i></p>	Refer to general response at the start of Section 3.2.

No.	Location	Drawing/ Document No.	Issue	Response
	Engineering Constraints		There is no mention of minimum lane widths applied for the ancillary roads. Council requests additional information regarding minimum lane widths for the ancillary roads is provided.	
5	REF – Section 3.22 Engineering Constraints	Table 3-2 Design Criteria	<p><i>Minimum horizontal radius:</i></p> <p><i>1200 metres (desirable minimum)</i></p> <p><i>875 metres (absolute minimum)</i></p> <p>There is no comment on super elevation / widening applied on curves.</p> <p>Table 7.13 AGTRD 100mm widening applied for curves 700 - 900m for B double 26m.</p> <p>RMS Supplement to AGTRD - Part 3 - Table 7.10, curves</p> <p><1600m (operating speed 100kph) require superelevation</p> <p>{<1950m, design speed 110kph}</p> <p>Desirable side friction 0.12 for trucks (Des Max & Abs Max)</p> <p>100kph operating speed</p> <p>AGTRD Part 3 Table 7.5AGTRD Part 3 Section 7.4.1 Equation 5 => Min Radius of 875m for 3% adverse cross fall / 100kph operating speed</p>	Refer to general response at the start of Section 3.2.

No.	Location	Drawing/ Document No.	Issue	Response
			<p>AGTRD Part 3 Section 7.4.1 Equation 5 => Min Radius of 514m for 3% super elevation / 100kph operating speed</p> <p>No design criteria provided for ancillary roads and what the minimum radius/widening / super elevation would be.</p> <p>Council requests that the design criteria is provided for ancillary roads including what the minimum radius / widening / super elevation would be.</p>	
6	REF – Section 3.22 Engineering Constraints	Table 3-2 Design Criteria	<p><i>Cut and fill batters:</i></p> <ul style="list-style-type: none"> • 4 Horizontal:1 Vertical (typical batter slopes) • 2 Horizontal:1 Vertical (where height of the batter is greater than 2.5 metres) • Minimum 4.0 metre wide bench at each 10 metre height increment <p>No comment from a geotechnical perspective.</p> <p>2:1 batters (for embankments greater than 2.5m) are considered a hazard as are not traversable or recoverable by an errant vehicle and need to be protected. The barrier systems (WRSB) proposed are suitable for up to a 2,270kg vehicle travelling at 100kph. Barriers proposed are not suitable for heavy vehicles.</p>	Refer to general response at the start of Section 3.2.

No.	Location	Drawing/ Document No.	Issue	Response
			<p>4:1 batters (or flatter) are considered recoverable</p> <p>3:1 to 4:1 batters are considered traversable but not recoverable</p> <p>Steeper than 3:1 are not recoverable (hazardous)</p> <p>To be recoverable for trucks batters need to be 10:1 or flatter</p> <p>Council requests that appropriate batters and/or protection systems are used.</p>	
7	REF – Section 3.22 Engineering Constraints	Table 3-2 Design Criteria	<p><i>Pavement type</i></p> <ul style="list-style-type: none"> Flexible with slow setting heavily bound sub-base Minimum asphalt layer thickness 105 millimetres <p>No detail on pavement type or pavement life provided for the ancillary roads.</p> <p>Council requests further details are provided as to the pavement type and pavement life for the ancillary roads.</p>	Refer to general response at the start of Section 3.2.
8	REF – Section 3.22 Engineering Constraints	Table 3-2 Design Criteria	<p><i>Safety barriers:</i></p> <ul style="list-style-type: none"> Type F concrete crash barrier (adjacent to bridge piers) W beam or wire rope safety barrier (on approaches) 	Refer to general response at the start of Section 3.2.

No.	Location	Drawing/ Document No.	Issue	Response
			<ul style="list-style-type: none"> Type F Concrete barrier is up to a MASH TL5 approved barrier (depending on length installed)W beam barrier is up to a MASH TL4 approved barrier (depending on product and length installed) WRSB barrier is up to a MASH TL3 approved barrier (depending on product and length installed) <p>No design drawings provided to check lengths and if working widths behind barriers have been provided.</p> <p>Council requests that design drawings are provided or that TfNSW confirm that proposed barrier lengths and working widths behind barriers comply with design standards.</p>	
9	REF – Section 3.22 Engineering Constraints	Figure 3.7	<p>Figure 3.7 shows WRSB with 1.0m wide verge behind</p> <p>RMS Approved Safety Barriers currently have 2 WRSB approved to MASH TL3 containment level. No approved WRSB products to greater than MASH TL3 level.</p> <p>MASH TL3 containment level designed for 1,100kg & 2,270kg at 100kph</p> <p>MASH TL4 containment level designed for 1,100kg & 2,270kg at 100kph & 10,000 kg at 90kph</p>	Refer to general response at the start of Section 3.2.

No.	Location	Drawing/ Document No.	Issue	Response
			<p>MASH TL5 containment level designed for 1,100kg & 2,270kg at 100kph & 36,000 kg at 80kph</p> <p>No comment on designed MASH containment level to be provided. Barriers nominated will only provide MASH TL3 containment level.</p> <p>The 2 x RMS approved products have a working width/Dynamic deflection of 3.0m</p> <p>Working width is defined as the addition of the dynamic deflection and vehicle rollover.</p> <p>The typical sections only show a 1m wide verge behind the WRSB then a 2:1 batter. This results in the hazard (2:1) being within the deflection of the barrier system nominated</p> <p>REF does not shown where barriers will be installed, the only indication is on the typical section in Figure 3.7 and 3.8. Figure 3.7 shows a WRSB and Figure 3.8 a regular performance bridge barrier (TBC). Typically concrete barriers (MASH TL5) are required to be installed on the road embankments on approach to rail corridors to increase the containment levels around the rail line. This is also something that would be considered on bridges over other roads and water bodies (Hunter River).</p> <p>Council requests that design drawings are provided or that TfNSW confirm that</p>	

No.	Location	Drawing/ Document No.	Issue	Response
			proposed barrier lengths and working widths behind barriers comply with design standards.	
10	REF – Section 3.22 Engineering Constraints	Table 3-2 Design Criteria & Figure 3.2	<p>The width of structure over the bypass at the southern connection is unknown. Does the shoulder width allow for cyclists? Is the barrier appropriate for cyclists?</p> <p>Council requests that TfNSW confirm the width of the structure over the bypass at the southern connection, if the shoulder width allows for cyclists and if so, is the barrier appropriate for cyclists?</p>	The shoulders would be sealed and generally be three metres (or 2.5 metres on the bridge over the floodplain) which would be suitable for on-road cyclists.
11	Gowrie Gates	Figure 3.5	<p>The shared path from the existing railway bridge has been omitted from the sketch. Section 3.2.3 states that a new shared path is to tie into the existing.</p> <p>Council requests that TfNSW confirm that a new shared path will be provided to tie into the existing as per section 2.3.2.</p>	The error on the figure is noted. The new shared path would tie into the existing shared path.
12	Northern Connection	Figure 3.6	<p>The right turn lane access to the rest area and the adjacent property are not catered for in the design. Both properties are subject to partial acquisition with restoration of full access.</p> <p>Council requests the TfNSW confirm if the right turn lane access to the rest area and</p>	The right turn access arrangement at this location would not change for the proposal.

No.	Location	Drawing/ Document No.	Issue	Response
			the adjacent property are to be catered for in the design?	
13	Northern Connection	Figure 3.6	<p>The length of the northbound merge lane, circa 220m, appears to be too short for merging to a 100km posted speed.</p> <p>Council requests that TfNSW confirms that the northbound merge lane at the northern connection meets current design guidelines for a 100km posted speed.</p>	<p>Refer to general response at the start of Section 3.2.</p> <p>The merge lane is an appropriate length.</p>
14	Northern Connection	Figure 3.6	<p>Access to the vehicle inspection area does not appear possible from the northbound lane of the bypass as it crosses the northbound merge lane from the existing NEH.</p> <p>Council requests that TfNSW clarify if the northbound merge lane at the northern connection meets current design guidelines for a 100km posted speed.</p>	The vehicle inspection area would be relocated to the southern connection.
15	The Northern Connection	Figure 3.6	<p>No provision for on-road cyclists is made for at eastern leg of intersection, allowing residents from the east cycle access to commercial area. Existing signalised intersection makes provision for north south cycle access.</p> <p>Council requests that TfNSW clarify if provision will be made for on-road cyclists is made for at eastern leg of intersection.</p>	The shoulders would be sealed and generally be three metres (or 2.5 metres on the bridge over the floodplain) which would be suitable for on-road cyclists.

No.	Location	Drawing/ Document No.	Issue	Response
16	Interchange B	Dec '19 Project Update document page 3.	<p>The eastern leg of the proposed new roundabout at the intersection of Maison Dieu Road and New England Highway develops into dual east bound lanes into Singleton, merging into a single lane before the Simpson Terrace intersection. The recently completed Gowrie Gates formation under the rail line is a single lane each way with shoulders. The proposed design significantly reduces the shoulder adjacent to the northern rail bridge abutment. Clear zones will need to be assessed for compliance. This will also make access to the ARTC access layback difficult due to slowing down in the through lanes to cross the layback accessing the rail corridor.</p> <p>Council requests that TfNSW clarifies that clear zones will be compliant and that access the ARTC layback has been considered.</p>	Refer to general response at the start of Section 3.2
17	Northern Connection	Dec '19 Project Update/ REF web portal	<p>Property access west of the northern connection is not clearly shown. Existing New England Highway includes two way traffic and a channelised right turn lane, this becomes a one way entry road prior to property access road. Affected properties are also to be impacted by the McDougalls Hill industrial estate growth area.</p> <p>Council requests that TfNSW consult with Council further in relation to this and</p>	This section of road would accommodate two-way traffic up to the property access at this location.

No.	Location	Drawing/ Document No.	Issue	Response
			considers future estate development and access via future stage of Casswell Terrace.	
18	John Street	Dec '19 Project Update/ REF web portal	<p>Visitors from north of town new - access to John St via Putty Rd connection.</p> <p>Council requests that. additional information / standard guide series sign details are considered.</p>	<p>Signage would be provided in accordance with relevant standards.</p> <p>Roads and Maritime will develop a signage strategy for the entrances to Singleton, in consultation with Singleton Council to encourage motorists to visit Singleton.</p>
19	John Street	Dec '19 Project Update / REF web portal	<p>Visitors from south of town access to John St via southern connection.</p> <p>Council requests that additional information [standard guide series sign details are considered.</p>	<p>Signage would be provided in accordance with relevant standards.</p> <p>Roads and Maritime will develop a signage strategy for the entrances to Singleton, in consultation with Singleton Council to encourage motorists to visit Singleton.</p>

3.3 REF issues

Table 3-3 Response to REF issues from Singleton Council

No.	Issue	REF Section	Comment	Response
1	Construction noise and vibration	Section 6.6	<p>The assessment identified that construction noise may exceed the criteria at a number of receivers during several construction scenarios. Pavement and earthwork activities are anticipated to cause the largest number of exceedances. These impacts will be managed through the implementation of mitigation measures including consultation with the affected community where required. Standard measures would be implemented via a construction noise and vibration management plan as is best practice.</p> <p>Council requests to be fully consulted during the preparation of this plan.</p>	The Construction Noise and Vibration Management Plan be provided to Council prior to the final approval of the plan.
2	Operational noise and vibration	Section 6.6 Appendix M	<p>The operational noise assessment recommends that noise barriers be implemented to minimise impacts. With the six proposed noise barriers in place, 89 noise sensitive receivers are considered to be eligible for the consideration of at-receiver noise treatment. This includes 37 receivers in Darlington, 21 receivers in Glenridding, 13 in Singleton Heights, nine in Singleton, three in Whittingham, five in McDougalls Hill and one in Rixs Creek.</p>	<p>Measures to reduce operational noise impacts have been incorporated into the design of the proposal including the provision of noise barriers and identifying properties eligible for architectural treatment.</p> <p>Notwithstanding, Section 6.6.5 of the REF includes the following measures generally consistent with suggestions made by Council:</p> <ul style="list-style-type: none"> • To confirm that the noise level targets are achieved, a post-construction noise monitoring program be carried out in accordance with the

No.	Issue	REF Section	Comment	Response
			<p>There does not appear to be any mitigation measures that pertain to operational noise — Council suggests the following measures:</p> <p>* An operational noise mitigation plan to be prepared in accordance with the Noise Mitigation Guideline (RMS April 2015) to include, but not limited to:</p> <p>-Confirmation of receivers requiring at-resident treatment following installation of noise barriers</p> <p>-Procedure for engaging with affected residents</p> <p>-At-residence treatment designs</p> <p>- Indicative costs for treatments</p> <p>-Procedure for seeking development approval for treatment where relevant.</p> <p>* At-resident treatment would be installed prior to the proposal becoming operational. Where properties have been identified for at-receiver noise treatment and would be impacted by noise from construction works, consultation to occur with those property owners about bringing forward the installation of treatments to provide noise mitigation during the construction of the proposal.</p>	<p>Noise Mitigation Guideline (Roads and Maritime 2014d)</p> <ul style="list-style-type: none"> Where properties have been identified for architectural treatment and these properties would be impacted by noise from construction works, Roads and Maritime would consult with those property owners on the early installation of treatments to provide noise mitigation during the construction of the proposal.

No.	Issue	REF Section	Comment	Response
3	Business impacts	Section 6.12 Appendix D	<p>Once operational, the proposal has the potential to impact local businesses within Singleton due to the diversion of traffic around the town. Surveys of local businesses and commuters carried out as part of investigations for the proposal identified that the overall impact to businesses is likely to be minor. The surveys identified that a large portion of highway traffic does not stop in Singleton despite travelling through. With this through traffic removed, amenity impacts in Singleton may improve due to reduced vehicle volumes in town. Singleton would remain visible from the bypass, with signage encouraging traffic to continue to stop in town to access local businesses.</p> <p>The REF includes a mitigation measure to complete further landowner survey at the detailed design stage.</p> <p>Council suggests that the survey on mitigation measures at the detailed design stage should also include businesses.</p> <p>Council also suggests that:</p> <ul style="list-style-type: none"> - Mitigation measures from this process are incorporated into proposal design and operation. - Use of local goods and services during construction should be encouraged and facilitated. This could be implemented via a 	<p>The comments on the operation of the proposal are noted.</p> <p>Business surveys were completed as part of the REF. The results of the landowner surveys are provided in Section 2.</p> <p>Local resources, goods and services would be used where possible subject to the discretion of the construction contractor selected for the construction of the proposal.</p>

No.	Issue	REF Section	Comment	Response
			<p>Procurement Plan that would be prepared in consultation with Council and the Business Chamber.</p> <p>- TfNSW should also confirm that local workers will be used i.e. no construction camps or FIFO.</p>	
4	Biodiversity	Section 6.1 Appendix I	<p>Council suggests that there is to be upfront consideration (and funding) of the ongoing maintenance of fauna habitat and connectivity structures to maintain their effectiveness and prevent them falling into disrepair.</p> <p>There should be a mitigation measure in the REF that relates to the preparation and implementation of an Offset Strategy, which would outline the number and process for TfNSW to retire required biodiversity credits (this measure is referred to in the working paper.)</p> <p>A further consideration for biodiversity may be any additional requirements that result from the work currently being done in response to the recent bush fires. This is of particular relevance for the Koala for which the NSW Koala Strategy: Bushfire Recovery Plan is currently being prepared.</p>	<p>Transport would be responsible for maintaining fauna connectivity structures. The maintenance of the structures is subject to separate Transport processes and funding which apply to connectivity structures for all Transport projects.</p> <p>Commitments regarding biodiversity offsets are described in Section 6.1.5 of the REF. Transport would fulfil offset requirements during detailed design or early in the construction phase.</p> <p>Fulfilling offset requirements under the BC Act may be achieved by Transport using one or more of the following offset strategies:</p> <ul style="list-style-type: none"> • In-perpetuity conservation through the establishment of a Stewardship site and the retirement of credits • Securing required credits through the open credit market • Payments to the Biodiversity Conservation Fund. <p>Section 3.8 of Appendix I (Biodiversity assessment) of the REF identified that:</p>

No.	Issue	REF Section	Comment	Response
			Any additional considerations of this or any other response be addressed prior to determination of the REF.	<ul style="list-style-type: none"> There is no potential Koala habitat within the impact area for the proposal The koala has a low likelihood of occurrence in the proposal area. <p>The Flora and Fauna Management Plan that would be developed for the proposal would manage potential impacts to flora and fauna habitat.</p>
5	Aboriginal heritage	Section 6.7	<p>The proposal is anticipated to impact 16 Aboriginal archaeological sites, with a total loss of value for 13 sites and partial loss of value for the remaining three sites. One site of cultural significance will also be impacted by the proposal, resulting in a partial loss of value. This is a significant impact to cultural sites and values.</p> <p>Council suggests that further discussion with the Aboriginal community will be required and appropriate interpretation (with local content and expertise) must be incorporated into urban design and landscaping.</p>	<p>As described in Section 6.7.1 of the REF a range of Aboriginal community consultation was carried out for the proposal in accordance with OEH's Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW, 2010a) and the <i>Procedure for Aboriginal cultural heritage consultation and investigation</i> (PACHCI) (Roads and Maritime 2013).</p> <p>Consultation would continue to be carried out with the Aboriginal community as listed in Table 6-47 of the REF. This includes consultation for:</p> <ul style="list-style-type: none"> The ongoing PACHCI process The development of a project specific Aboriginal cultural heritage interpretation plan The development of an education booklet (or similar) on the cultural values and historic records of the Railway Bridge Camps. The long term management of stone artefacts recovered from the test excavations for the proposal.

No.	Issue	REF Section	Comment	Response
6	Non-Aboriginal heritage	Section 6.8	<p>Three locally listed heritage items will be impacted by the proposal. These are the Former Pumping Station, Bebeah and the Woolpack Inn. Direct impacts would occur to the Former Pumping Station resulting in its complete removal. Bebeah and the Woolpack Inn were identified as being directly impacted by the proposal, but works are occurring within the curtilage of these two items while not directly impacting the heritage significance of the listed buildings.</p> <p>Council requests that every effort should be made to salvage and adaptively reuse heritage material.</p> <p>Council and the community should be involved in making decisions around any reuse. Appropriate interpretation (with local content and expertise) must be incorporated into urban design and landscaping.</p>	Transport will investigate the need to salvage heritage fabric from listed items removed by the proposal for possible reuse in heritage reinterpretation in consultation with Council.
7	Flooding	Section 6.2	<p>Flood modelling was undertaken by WBM BTM and found an increase and decrease in the peak flood level in different locations. While the proposal would not substantially decrease peak flood levels in any location, there are reduced peak flood levels through much of Singleton and Glenridding.</p> <p>The infrastructure for the proposal would provide an additional flood evacuation route in</p>	The flood model is not owned by Transport. The model is owned by BMT WBM Pty Ltd which is the consultant that completed the flooding assessment. Transport has no opposition to Council's future use of the flood modelling if agreed by BMT WBM.

No.	Issue	REF Section	Comment	Response
			<p>the event of an early warning flood evacuation for Singleton. This is a significant community benefit.</p> <p>To assist with future flood emergency planning, Council requests that TfNSW provides flood modelling results to Council and the SES to incorporate into emergency planning procedures.</p>	
8	Visual amenity	Section 6.10	<p>The proposal will be visually prominent from several key viewpoints around Singleton. The proposal features a number of elements that would be obvious within the predominantly rural landscape including embankments/batters, bridges and noise walls. Change resulting from the proposal would mainly affect residents and businesses adjoining the proposal area, and road users. High to moderate landscape character impacts are predicted for Singleton old town and surrounding rural areas. High to moderate visual impacts are predicted at Ellen Avenue, Mitchel Avenue and Army Camp Road.</p> <p>The REF prescribes an Urban Design Plan to address these issues. Council and the community should be actively involved in the development and implementation of this plan. The plan should include measures, timeframes and funding for interpretation of Aboriginal, non-Aboriginal cultural heritage and biodiversity values</p>	<p>Council would be given the opportunity to provide comment on the Urban Design Plan.</p> <p>A project specific Aboriginal cultural heritage interpretation plan will be developed to promote understanding and awareness of the cultural heritage values of the study area. Refer to Table 6-38 of the REF for further detail.</p>

No.	Issue	REF Section	Comment	Response
			(using local content and expertise) through place naming, public art, signage and landscaping etc.	
9	Land acquisition	Section 6.11	<p>The proposal requires the acquisition of 53 lots, incorporating 44 privately owned and nine publically owned parcels of land. 28 structures would be demolished once acquisition is complete. In addition, eight properties would be fragmented.</p> <p>Mitigation prescribed in the REF appears to be adequate and best practice. it is accepted that this process may be lengthy give the number or properties and landowners involved.</p> <p>Council requests ongoing involvement and updates on the acquisition progress. Council also requests that any residual parcels of land be gifted to Council if the land is of any use.</p>	<p>Property acquisition will be carried out in accordance with the <i>Land Acquisition Information Guide (Roads and Maritime, 2014)</i> and the <i>Land Acquisition (Just Terms Compensation) Act 1991</i>.</p> <p>Transport will prepare a strategy for parcels of residual land not required for the operation of the proposal. The strategy would consider opportunities for land to be sold on the open-market and/or following consultation, to adjacent landholders.</p>
10	Public utility impacts	Section 3.5	<p>The proposal will impact on a pump station and other water and sewer infrastructure.</p> <p>Details on service disruptions should be identified during detailed design and Council consulted regarding how they will be managed. If replacement of Council owned assets is required, the infrastructure should be replaced at a higher level of service, funded by TfNSW.</p>	<p>Consultation with Council regarding the potential impacts to Council's Waterworks Lane facility was carried out during the preparation of the REF and this consultation is ongoing.</p> <p>Transport will relocate impacted infrastructure to a suitable/nearby location to ensure the assets and service is maintained.</p>

No.	Issue	REF Section	Comment	Response
11	Construction compounds	Section 3.4	The final location of construction compounds should be determined in consultation with Council. Council may consider siting compounds in areas that could be gifted at the end of construction with the infrastructure established retained for a suitable future use.	<p>The final location of construction compounds would be determined during detailed design.</p> <p>Transport will prepare a strategy for parcels of residual land (including land used for construction compounds) not required for the operation of the proposal. The strategy would consider opportunities for land to sold on the open-market and/or following consultation, to adjacent landholders.</p>
12	Construction traffic	Section 6.5	Scheduled traffic disruptions need to consider local peak traffic periods (such as mine shift changes) in consultation with Council.	<p>A detailed construction traffic management plan will be prepared in accordance with Traffic Control at Work Sites Manual Version 4 (RTA, 2010) and Specification G10 - Control of Traffic. The plan will include site specific traffic control measures (including signage) to manage and regulate traffic movement.</p> <p>The plan will be approved by Transport before implementation to provide a comprehensive and objective approach to minimising potential impacts on road network operations during construction. The traffic management plan would be provided to Council prior to the final approval of the plan.</p>

4 Further investigations

4.1 Aboriginal heritage - market gardens

4.1.1 Introduction

As part of the REF, an Aboriginal Cultural Heritage Assessment Report was completed which was provided at Appendix E and summarised in Chapter 6.7 of the REF.

Feedback at one of the Singleton Bypass Aboriginal Focus Groups (AFG) sessions and on the draft ACHAR completed as part of the REF, raised concern around the possible existence of a market garden site, with associated cultural values, on the Hunter River near Gowrie. The concern was that the area was not sufficiently identified during the assessment process that informed the cultural values assessment (CVA) which in turn informed the ACHAR.

Subsequently, appropriate Registered Aboriginal Parties (RAPs) and nominated knowledge holders were consulted to try and identify any oral or documentary evidence of market gardens at Gowrie.

During the original CVA process, the potential for market gardens was discussed with the RAPs and nominated knowledge holders with a number being aware of the historical presence of market gardens on the Hunter River run by Chinese Australians and the involvement of Aboriginal people in working and harvesting these gardens. The exact location of the market gardens was not known to them.

After the CVA was completed, more consultation with RAPs and nominated knowledge holders was carried out, however further information regarding the market gardens was unable to be attained.

4.1.2 Methodology

Further research was carried out during and following the public exhibition of the REF in an attempt to identify further information regarding the market gardens. This included extensive searches and research of the following resources:

- Archival and manuscript records that could potentially hold evidence of market gardens in the vicinity of Gowrie
- Census records to identify any Chinese Australian residents at Gowrie
- Historical maps and land use records or other horticultural ventures in the vicinity of Gowrie
- Collections of the State Archives and Records of New South Wales, the Singleton Public Library, Singleton Historical Society & Museum, Land Registry Services and the Trove newspaper collection.

No records indicating the existence of market gardens at or near Gowrie were found.

4.1.3 Key findings

In line with the findings presented in the CVA, the only records relating to market gardens in the area were those run by a Chinese Australian firm, Sing Lee and Co., on land located near the Dunolly Ford bridge (across the Hunter River from the Redbourneberry Aboriginal living places).

As discussed in the CVA, these market gardens were not within the Gowrie area or the proposal area. However, it is noted that the Dunolly Ford location shares two key characteristics with Gowrie, they are both located near a bridge over the Hunter River and near a major Aboriginal community living place. The area identified in the CVA as Cultural Site A: Gathering Place is located near the bridge at Gowrie.

It is considered possible that the two locations, that of Cultural Site A in the vicinity of Gowrie, and the Dunolly Ford market gardens near Redbourneberry, have become conflated in oral tradition and memory.

4.1.4 Revised safeguards and management measures

No additional mitigation measures are required.

4.2 Aboriginal heritage - native title

It is noted that at the time of the preparation of the Cultural Heritage Assessment Report (CHAR) there was one valid native title claim over the proposal area, Scott Franks and Anor on behalf of the Plains Clan of the Wannarua People (NC2013/006). On 2 March 2020 this claim was discontinued. There are no active native title claims over the proposal area.

4.2.1 Revised safeguards and management measures

No additional mitigation measures are required.

4.3 Social and economic - landowner surveys

As part of the REF, a Socio-economic impact assessment (SEIA) was completed in accordance with the *Environmental Impact Assessment Practice Note – Socio-economic assessment (EIA-N05)* (NSW Roads and Maritime Services, 2013). This assessment was included as Appendix D (Socio-economic impact assessment) of the REF.

Section 9 of the SEIA identified mitigation measures to address direct socio-economic impacts on sensitive receivers and to manage community concerns with regard to key environmental issues. Table 4-1 contains the environmental safeguard relating to landowner surveys to be carried out during detailed design, identified in the REF. The methodology and findings of the survey are in the following sections.

Table 4-1 Mitigation measure extract from the SEIA (Appendix D of the REF)

Impact	Environmental Safeguards	Responsibility	Timing
Landowner impacts	<p>Landowner surveys will be carried out to:</p> <ul style="list-style-type: none"> • Gather information about the current use and activities carried out on their property • Identify how the proposal would affect ongoing land use and activities on their property • Inform the development of appropriate mitigation measures. 	Transport	Detailed design

4.3.1 Methodology

A landowner survey was undertaken to gain a better understanding of the main issues, perceptions and concerns of landowners in regard to the construction and operation of the proposal. The survey also provided information about the current use and activities carried out on the property, and how the proposal would affect ongoing land use and activities on the property.

Surveys were undertaken over eight days, with 26 landowners being surveyed. The landowner surveys were carried out from 15 to 18, 23 to 25 and 31 October 2019 by a team consisting of a community engagement consultant and the project manager. Landowners who would be directly impacted by the proposal were surveyed.

4.3.2 Key findings

Findings from the landowner surveys have been analysed and summarised in Appendix C, with the key findings outlined below. Of the 26 landowners:

- Just over half of the properties were used as a primary residence
- Almost half of the properties were used for agricultural purposes, with almost a quarter of properties being vacant and only used for agricultural or commercial purposes
- Around half of the landowners indicated that they would be able to continue regular activities on their property as normal
- Around half of the landowners identified noise as being both a construction and operational impact on them as a result of the proposal.

These concerns were previously identified and formed part of the assessment in Chapter 6.12 of the REF, addressing impacts to agricultural land and construction and operational noise.

4.3.3 Revised safeguards and management measures

No additional mitigation measures are required. The existing mitigation measures provided in the REF are considered adequate.

5 Environmental management

The REF for the proposal 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).

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 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 environment staff, Transport Northern region, prior to the commencement of any on-site works. The CEMP will be a working document, subject to ongoing change and updated as necessary to respond to specific requirements. The CEMP would be developed in accordance with relevant specifications.

5.2 Summary of safeguards and management measures

The REF for the proposal 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. No changes to the environmental safeguards and management measures to those presented in the REF have occurred.

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

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
GEN1	General - minimise environmental impacts during construction	<p>A CEMP will be prepared and submitted for review and endorsement of the Transport Environment Manager prior to commencement of the activity. As a minimum, the CEMP will include the following:</p> <ul style="list-style-type: none"> • A Surface Water Management Plan (SWMP) • Any requirements associated with statutory approvals • Details of how the proposal will implement the safeguards outlined in the REF • Issue-specific environmental management plans • Roles and responsibilities • Communication requirements • Induction and training requirements • Procedures for monitoring and evaluating environmental performance, and for corrective action • Reporting requirements and record-keeping • Procedures for emergency and incident management • Procedures for audit and review. 	Construction Contractor	Pre-construction/ construction
B1	Biodiversity	<p>A Flora and Fauna Management Plan will be prepared and implemented as part of the CEMP. It will address terrestrial and aquatic matters and will include, but not necessarily be limited to:</p> <p>(a) plans for the construction site and adjoining area showing native vegetation, flora and fauna habitat, threatened species and threatened ecological communities;</p> <p>(b) plans showing areas to be cleared and areas to be protected, including exclusion zones and protected habitat features (e.g. hollow-bearing trees), and areas for rehabilitation or re-establishment of native vegetation. The limits of clearing within the</p>	Construction contractor	Pre-construction and construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		<p>construction site and protected habitat features will be clearly delineated using appropriate signage, barriers, fencing or markings;</p> <p>(c) requirements set out in the Landscape Design Guideline (RMS 2018);</p> <p>(d) procedures addressing relevant matters specified in the Biodiversity Guidelines - Protecting and managing biodiversity on RTA projects (RTA 2011) including but not limited to:</p> <ul style="list-style-type: none"> • pre-clearing, including the outcomes of final flora and fauna species checks, establishment of exclusion zones and on-ground identification of specific habitat features to be retained (such as hollow-bearing trees) • vegetation clearing and bushrock removal, including staged habitat removal and any specified seasonal limits on clearing activities • fauna handling and unexpected threatened species finds • rehabilitation, revegetation, re-use of soils, woody debris and bushrock, and other habitat management actions • weed, pathogen and pest management <p>(e) procedures addressing relevant matters specified in the NSW DPI (Fisheries) Policy and guidelines for fish habitat conservation and management.</p> <p>(f) monitoring during construction and post-construction</p> <p>(g) adaptive management measures to be applied if monitoring indicates unexpected adverse impacts.</p>		
B2	Biodiversity	<p>Measures to further avoid and minimise the construction footprint and native vegetation or habitat removal will be considered during the detailed design stage and implemented where practicable and feasible. Measures to avoid and minimise impacts should be prioritised in the following order:</p> <p>(a) critical habitat</p>	Construction contractor	Pre-construction and construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		(b) threatened species, endangered ecological communities, groundwater dependent ecosystems or their habitat (c) native vegetation and habitat supporting flora and fauna connectivity and/or that supports other environmental objectives such as protecting water quality, hydrology or erosion and sediment controls (d) native vegetation of higher quality condition (e) other native vegetation.		
B3	Biodiversity	Consistent with the Biodiversity Guidelines - Protecting and managing biodiversity on RTA projects (RTA 2011), and any specific requirements of the approved Flora and Fauna Management Plan, management arrangements will be implemented to ensure unavoidable vegetation and bushrock removal minimises biodiversity impacts as far as practicable. As a minimum that will include: (a) no vegetation clearing or bushrock removal beyond limits identified in this (b) avoiding identified exclusion zones and protected habitat features. (c) avoiding mixing of topsoil with woody debris materials (d) separation of woody vegetation suitable for re-use during construction and rehabilitation or revegetation works (e) implementation of staged clearing (f) trimming and pruning to be undertaken in accordance with relevant Australian Standards (g) in riparian zones: avoiding clearing during likely flood periods; ensuring cleared vegetation does not enter the waterway; installation of suitable sedimentation and erosion control; retaining roots and stumps to maintain bank stability; applying the hierarchy for snag management set out in the Guidelines.	Construction contractor	Pre-construction and construction
B4	Biodiversity	Prior to the commencement of construction, carry out:		

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		<ul style="list-style-type: none"> Targeted surveys to confirm the presence of the following along the Hunter River and unnamed tributary to the north of the Hunter River within the area to be impacted by the proposal <ul style="list-style-type: none"> River red gum (<i>Eucalyptus camaldulensis</i>) (endangered population - BC Act) Hunter Floodplain Red Gum Woodland in the NSW North Coast and Sydney Basin Bioregions (EEC – BC Act) Threatened flora survey, fauna habitat assessments and ground-truthing of vegetation mapping, between the Hunter River and the southern extent of the area surveyed by Umwelt (2019), north of the New England Highway near Gowrie Gates, within the area to be impacted by the proposal Ground truthing surveys of the regional vegetation mapping within the McDougalls Hill ancillary facility to confirm presence of: <ul style="list-style-type: none"> Central Hunter Ironbark – Spotted Gum – Grey Box Forest in the NSW North Coast and Sydney Basin Bioregions EEC (BC Act) Central Hunter Valley Eucalypt Forest and Woodland CEEC (EPBC Act) <p>No clearing of threatened native vegetation is to be carried out within the McDougalls Hill ancillary facility.</p> <p>Subject to the outcomes of the above, a consistency review or environmental assessment may be required.</p>		
B5	Biodiversity	<p>The unexpected species find procedure is to be followed under <i>Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects</i> (RTA 2011) if threatened ecological communities, not assessed in the biodiversity assessment, are identified in the proposal site.</p>	Construction contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
B6	Biodiversity	<p>A nest box strategy would be developed and implemented during the detailed design stage in accordance with <i>Guide 5: Re-use of woody debris and bushrock</i> and <i>Guide 8: Nest boxes of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects</i> (RTA 2011). The strategy is to include:</p> <ul style="list-style-type: none"> (a) a trial of artificial hollow creations. (b) reinstallation of suitable hollows removed by the proposal. (c) Installation of nest boxes in the event that there are not sufficient trees for artificial hollow creation and hollows for reinstallation. 	Construction contractor	Detailed design
B7	Biodiversity	<p>Prior to the commencement of construction, carry out monitoring to determine the presence of threatened microbats in the culverts that are part of the former Great Northern Railway.</p> <p>If threatened microbats are identified, collect the following information:</p> <ul style="list-style-type: none"> (a) Species present. (b) Total number of individuals and groups per occupied roost site. (c) Description of occupied roost sites. (d) Breeding status of the colony, including approximate adult to juvenile ratios. 	Construction contractor	Pre-construction
B8	Biodiversity	<p>If roosting threatened microbats are found during pre-construction monitoring, a Bat Management Plan is to be developed and implemented. The Bat Management Plan is to be prepared by a microbat specialist and include the following:</p> <ul style="list-style-type: none"> (a) A monitoring program for both during and outside of breeding periods. (b) Details of construction activities to be monitored that may affect microbat habitat, particularly light, noise, vibration, alteration of drainage into culverts. (c) Mitigation measures to be implemented during construction, including regular inspections of impacts from sedimentation and 	Construction contractor	Pre-construction/ construction/ post construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		<p>weed encroachment to culvert entrances, consider timing and nature of immediately adjacent works in relation to known breeding period of relevant threatened microbats.</p> <p>(d) Adaptive management measures to be implemented if monitoring indicates a decline in bat numbers or if bats are observed leaving the roost during construction activities.</p> <p>(e) A process for evaluating the effectiveness of management measures.</p>		
B9	Biodiversity	In accordance with Section 199 of the FM Act, Transport would notify DPI Fisheries in writing of any proposed dredging or reclamation in the Hunter River and its tributary. Transport would consider any matters raised by the Minister.	Transport	Pre-construction
B10	Biodiversity	In accordance with Section 219 of the FM Act, Transport would seek a permit from DPI Fisheries for any temporary blockage of fish passage. Transport would consider any matters raised by the Minister.	Transport	Pre-construction
B11	Biodiversity	Instream silt curtains would be implemented and maintained for construction in the Hunter River. Silt curtains would be installed such that they do not block fish passage.	Construction contractor	Construction
B12	Biodiversity	<p>Changes to existing surface water flows would be minimised through detailed design.</p> <p>Any rock platform required to be constructed within the Hunter River bridge would be designed and constructed to prevent blocking the main river channel. The platform would be designed to ensure that flow of the main river channel and fish passage is maintained even during low flow periods.</p> <p>The Department of Primary Industry (DPI) would be consulted on the final design.</p>	Construction contractor	Detailed design

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
B13	Biodiversity	<p>A wildlife connectivity strategy would be finalised and implemented during the detailed design stage in accordance with the draft Transport Wildlife Connectivity Guidelines (RMS 2011). The strategy is to focus on maintaining connectivity in the northern extent of the proposal and is to include, but not be limited to:</p> <ul style="list-style-type: none"> (a) provision for a rope crossing with an indicative location between chainages 8450 and 8725 (b) identification of trees suitable for retention in the northern connection and tie in to facilitate glider crossings (c) consideration of additional gliding crossing structures where the width of disturbance is greater than 50 metres (d) type and extent of any associated landscaping or structures such as fencing or fauna infrastructure 	Construction contractor	Detailed design
W1	Surface water and flooding	<p>A Soil and Water Management Plan will be prepared in accordance with QA Specification G38 and implemented as part of the CEMP. The Plan will identify all reasonably foreseeable risks relating to soil erosion and water pollution associated with undertaking the activity, and describe how these risks will be managed and minimised during construction. That will include arrangements for managing pollution risks associated with spillage or contamination on the site and adjoining areas, and monitoring during and post-construction.</p>	Construction Contractor	Pre-construction/ construction
W2	Surface water and flooding	<p>A flood response management plan will be prepared as part of the CEMP. The Flood Risk Management Plan will address, but not necessarily be limited to:</p> <ul style="list-style-type: none"> • Processes for monitoring and mitigation flood risk • Steps to be taken in the event of a flood warning including removal or securing of loose material, equipment, fuels and chemicals. 	Construction contractor	Construction
W3	Surface water and flooding	<p>A site specific Erosion and Sediment Control Plan(s) will be prepared and implemented and included in the Soil and Water Management</p>	Construction Contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		<p>Plan. The Plan(s) will identify detailed measures and controls to be applied to minimise erosion and sediment control risks including, but not necessarily limited to: runoff, diversion and drainage points; sediment basins and sumps; scour protection; stabilising disturbed areas as soon as possible, check dams, fencing and swales; and staged implementation arrangements.</p> <p>The Plan will also include arrangements for managing wet weather events, including monitoring of potential high risk events (such as storms) and specific controls and follow-up measures to be applied in the event of wet weather.</p>		
W4	Surface water and flooding	Stockpiles will be designed, established, operated and decommissioned in accordance with the RTA Stockpile Site Management Guideline 2011.	Construction Contractor	Construction
W5	Surface water and flooding	<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"> • Landcom's Managing Urban Stormwater: Soils and Construction series • RTA Landscape Guideline • RMS Guideline for Batter Stabilisation using Vegetation (2015). 	Construction Contractor	Construction
W6	Surface water and flooding	<p>Consistent with any specific requirements of the approved Soil and Water Management, control measures will be implemented to minimise risks associated with erosion and sedimentation and entry of materials to drainage lines and waterways. That will include, but not necessarily be limited to:</p> <ul style="list-style-type: none"> • Sediment management devices, such as fencing, hay bales or sand bags 	Construction Contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		<ul style="list-style-type: none"> Measures to divert or capture and filter water prior to discharge, such as drainage channels and first flush and sediment basins Scour protection and energy dissipaters at locations of high erosion risk Installation of measures at work entry and exit points to minimise movement of material onto adjoining roads, such as rumble grids or wheel wash bays Appropriate location and storage of construction materials, fuels and chemicals, including bunding where appropriate. 		
W7	Surface water and flooding	Batters will be designed and constructed to minimise risk of exposure, instability and erosion, and to support long-term, on-going best practice management, in accordance with Transport 'Guideline for Batter Surface Stabilisation using vegetation' (2015).	Transport / Construction Contractor	Detailed design/ construction
W8	Surface water and flooding	Two spill containment basins with a minimum volume of 25,000 Litres are to be provided on the north and south side of the Hunter River.	Transport / Construction Contractor	Detailed design/ Pre-construction/construction
W9	Surface water and flooding	<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. The Spill Management Plan will address, but not necessarily be limited to:</p> <ul style="list-style-type: none"> Management of chemicals and potentially polluting materials Any bunding requirements Maintenance of plant and equipment Emergency management, including notification, response and clean-up procedures. 	Construction Contractor	Pre-construction/ construction
W10	Surface water and flooding	A water quality monitoring program would be developed and implemented as part of the Soil and Water Management Plan in accordance with Transport Guideline for Construction Water Quality	Construction Contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		<p>Monitoring (Roads and Maritime, 2003). The monitoring program is to include</p> <ul style="list-style-type: none"> • Visual monitoring of local water quality • Up and down stream water quality monitoring of the Hunter River prior to the start of construction • Monthly up and down stream water quality monitoring for the duration of working within and over the Hunter River. 		
W11	Surface water and flooding	Any dewatering activities will be undertaken in accordance with the RTA Technical Guideline: Environmental management of construction site dewatering in a manner that prevents pollution of waters.	Construction Contractor	Detailed design/ Construction
E1	Contamination	The CEMP will include an unexpected finds protocol for potentially contaminated material encountered during construction work.	Construction contractor	Construction
E2	Contamination	<p>If contaminated areas are encountered during construction, appropriate control measures will be implemented to manage the immediate risks of contamination. This may include but not be limited to:</p> <ul style="list-style-type: none"> • Diversion of surface runoff • Capture of any contaminated runoff • Temporary capping. <p>All other works that may impact on the contaminated area will cease until the nature and extent of the contamination has been confirmed and any necessary site-specific controls or further actions identified in consultation with the Transport Environment Manager and/or the EPA.</p>	Construction contractor	Construction
E3	Contamination	<p>An Asbestos Management Plan will be developed and implemented to manage asbestos and asbestos containing material if encountered during the construction. The plan will include:</p> <ul style="list-style-type: none"> • Identification of potential asbestos on site • Procedures to manage and handle any asbestos 	Construction contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		<ul style="list-style-type: none"> Mitigation measures if asbestos is encountered during construction Procedures for disposal of asbestos in accordance with NSW EPA guidelines, Australian Standards and relevant industry codes of practice. 		
E4	Soils	An Acid Sulfate Materials Management Plan will be prepared and implemented as part of the CEMP. The Plan will be prepared in accordance with the RTA Guidelines for the Management of Acid Sulfate Materials.	Construction contractor	Construction
T1	Traffic and transport	Disruptions to property access and traffic will be notified to landowners at least five days prior in accordance with the relevant community consultation processes outlined in the TMP	Transport	Detailed design
T2	Traffic and transport	Where any legal access to property is permanently affected, arrangements for appropriate alternative access will be determined in consultation with the affected landowner and local road authority.	Construction contractor and Transport	Detailed design
T3	Traffic and transport	Access to properties will be maintained during construction. Where that is not feasible or necessary, temporary alternative access arrangements will be provided following consultation with affected landowners and the relevant local road authority.	Construction contractor and Transport	Construction
T4	Traffic and transport	<p>A detailed construction traffic management plan will be prepared in accordance with <i>Traffic Control at Work Sites Manual Version 4</i> (RTA, 2010) and <i>Specification G10 - Control of Traffic</i>. The plan will be approved by Transport before implementation to provide a comprehensive and objective approach to minimise any potential impacts on road network operations during construction. The plan will include:</p> <ul style="list-style-type: none"> Access and haulage routes Measures to maintain access to local roads and properties Site specific traffic control measures (including signage) to manage and regulate traffic movement 	Construction contractor	Pre-construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		<ul style="list-style-type: none"> Measures to maintain pedestrian and cyclist access Requirements and methods to consult and inform the local community of impacts on the local road network Access to construction sites including entry and exit locations and measures to prevent construction vehicles queuing on public roads. A response plan for any construction traffic incident Consideration of other developments that may be under construction to minimise traffic conflict and congestion that may occur due to the cumulative increase in construction vehicle traffic Monitoring, review and amendment mechanisms. 		
T5	Traffic and transport	Where practical, heavy vehicle movements would be outside the traffic peak hours to minimise impacts on the existing road network operation during construction.	Construction contractor	Construction
T6	Traffic and transport	Preparation of pre-construction and post construction road condition reports for local roads likely to be used during construction. Any damage resulting from construction (not normal wear and tear) will be repaired unless alternative arrangements are made with the relevant road authority. Copies of road condition reports will be provided to the local roads authority.	Construction contractor	Pre-construction/ post construction
T7	Traffic and transport	Pedestrian and cyclist access will be maintained throughout construction. Where that is not feasible or necessary, temporary alternative access arrangements will be provided following consultation with affected landowners and the local road authority.	Construction contractor	Construction
N1	Noise and vibration	<p>A Construction Noise and Vibration Management Plan (CNVMP) would be prepared as part of the Construction Environmental Management Plan. The CNVMP would identify:</p> <ul style="list-style-type: none"> all potential significant noise and vibration generating activities associated with the activity noise and vibration sensitive receptors 	Contractor	Pre-construction/ post construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		<ul style="list-style-type: none"> measures to be implemented during construction to minimise noise and vibration impacts, such as restrictions on working hours, staging, placement and operation of work compounds, parking and storage areas, temporary noise barriers, haul road maintenance, and controlling the location and use of vibration generating equipment feasible and reasonable mitigation measures to be implemented, taking into account the Transport's Beyond the Pavement urban design policy, process and principles. a monitoring program to assess performance against relevant noise and vibration criteria arrangements for consultation with affected neighbours and sensitive receivers, including notification and complaint handling procedures an out of hours works procedure, including approval process and proposed mitigation measures. 		
N2	Noise and vibration	<p>All sensitive receivers likely to be affected will be notified at least five days prior to commencement of any works associated with the activity that may have an adverse noise or vibration impact. The notification will include details of:</p> <ul style="list-style-type: none"> the project construction period and construction hours contact information for project management staff complaint and incident reporting and how to obtain further information 	Contractor	Construction
N3	Noise and vibration	<p>All employees, contractors and subcontractors are to receive an environmental induction. The induction must at least include:</p> <ul style="list-style-type: none"> All relevant project specific and standard noise and vibration mitigation measures Relevant licence and approval conditions 	Contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		<ul style="list-style-type: none"> • Permissible hours of work • any limitations on high noise generating activities • Location of nearest sensitive receivers • Construction employee parking areas • Designated loading/unloading areas and procedures • Site opening/closing times (including deliveries) • Environmental incident procedures. 		
N4	Noise and vibration	<p>Where feasible and reasonable, construction should be carried out during the standard daytime working hours. Work generating high noise and/or vibration levels should be scheduled during less sensitive time periods.</p> <p>Any variations to the standard construction hours will follow the approach RTA Environmental Facts Sheet - Noise Management and Night Works, including consultation with the affected local community</p>	Contractor	Construction
N5	Noise and vibration	Where reasonable and feasible, high noise generating activities (75dB(A) L_{eq} at receiver) be used during standard construction hours and in continuance blocks of no more than three hours with at least one hour respite between each block of work generating high noise impact, where the location of the work is likely to impact the same receiver.	Contractor	Construction
N6	Noise and vibration	<p>Where high noise generating activities (75 dB(A) L_{eq} at receiver) are required out of hours the following will be implemented:</p> <ul style="list-style-type: none"> • The equipment will be used prior to 10pm where reasonable and feasible • Where the above cannot be achieved the equipment will be used prior to midnight where reasonable and feasible <p>It is not proposed to apply a three hour on and a one hour off respite approach in an effort to ensure that the use of such equipment is completed as early in the night as possible.</p>	Contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
N7	Noise and vibration	Where properties have been identified for architectural treatment and these properties would be impacted by noise from construction works, Transport would consult with those property owners on the early installation of treatments to provide noise mitigation during the construction of the proposal.	Transport	Pre-construction
N8	Noise and vibration	<p>The following will be implemented for deliveries to and from the proposal</p> <ul style="list-style-type: none"> • Loading and unloading of materials/deliveries is to occur as far as possible from sensitive receivers. • Dedicated loading/unloading areas to be shielded if close to sensitive receivers. • Delivery vehicles to be fitted with straps rather than chains for unloading, wherever possible. <p>Construction sites would be arranged to limit the need for reversing associated with regular/repeatable movements</p>	Contractor	Construction
N9	Noise and vibration	Non-tonal reversing beepers (or an equivalent mechanism) must be fitted and used on all construction vehicles and mobile plant regularly used on site and for any out of hours work.	Contractor	Construction
N10	Noise and vibration	The noise associated with the operation of construction ancillary facilities would primarily result from the operation of fixed and mobile plant and truck movements. Consideration would be given to the layout of the site in order to maximise distance and shielding to nearby receivers.	Contractor	Pre-construction and Construction
N11	Noise and vibration	Where practicable, work should be scheduled to avoid major student examination periods such as before or during Higher School Certificate and at the end of higher education semesters.	Contractor	Construction
N12	Noise and vibration	At compound sites, consider positioning site sheds, earth bunds and hoarding to maximise shielding to residential receivers	Contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
N13	Noise and vibration	<p>In circumstances where the noise levels are predicted to exceed construction noise management levels after implementation of the general work practices, additional mitigation measures are required.</p> <p>These measures include the following:</p> <ul style="list-style-type: none"> • Monitoring • Notification (letterbox drop or equivalent) • Specific notifications • Phone calls • Individual briefings • Respite Offers • Respite Periods • Duration Respite. • Alternative Accommodation 	Contractor	Construction
N14	Noise and vibration	Vibration intensive equipment size would be selected to avoid working within the structural damage minimum working distances The use of less vibration intensive methods of construction or equipment would be considered where feasible and reasonable.	Contractor	Construction
N15	Noise and vibration	Where the use of vibration intensive equipment within the relevant minimum working distances cannot be avoided, prior to the commencement of vibration intensive work, a detailed inspection will be carried out and a written and photographic report prepared to document the condition of buildings and structures within the minimum working distances. A copy of the report will be provided to the relevant land owner or land manager.	Contractor	Pre-Construction
N16	Noise and vibration	To confirm that the noise level targets are achieved, a post-construction noise monitoring program be carried out in accordance with the Noise Mitigation Guideline (Roads and Maritime 2014d).	Transport	Operation

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
B1	Aboriginal heritage	A total of 16 Aboriginal archaeological sites, detailed in Table 6-37 of the REF will be impacted by the proposal. Transport should apply for an 'all of area' AHIP for land to be impacted by the proposal (the 'AHIP area' shown on Figure 38 of Appendix E). This AHIP will allow impacts to these sites.	Transport	Detailed design / pre-construction
B2	Aboriginal heritage	Impacted open artefact site Singleton Bypass OAS19 (37-6-3903, 37-6-1466 and 37-6-1468) has been assessed as being of moderate scientific significance and will be partially impacted by the proposal. To mitigate the impact of the proposal on this site, an archaeological salvage program incorporating surface collection and excavation is recommended for the impacted portion of this site. Salvage activities within OAS19 can only occur after an AHIP has been obtained and should be completed in accordance with the research design and methodology provided in Appendix F of AECOM's AAR.	Transport	Detailed design
B3	Aboriginal heritage	Impacted open artefact sites Singleton Bypass OAS2 (37-6-3895), OAS7 (37-6-3889), OAS9 (37-6-3887), OAS10 (37-6-3886), OAS11 (37-6-3892), OAS12 (37-6-3891), OAS13 (37-6-3900), OAS15 (37-6-3898), OAS17 (37-6-3905), OAS18 (37-6-3904), McDougall Hill 2 (37-6-0789) and McDougall Hill 3 (37-6-0788) have been assessed as being of low scientific significance. Regardless, in recognition of their cultural significance, community collection is recommended for these sites, with collection to be limited to the impacted portion of each site. Community collection can only occur after an AHIP has been obtained from OEH and should be completed in accordance with research design and methodology provided in Appendix F of AECOM's AAR.	Transport	Detailed design
B4	Aboriginal heritage	Impacted subsurface artefact scatter sites Singleton Bypass OAS21 and OAS22 have been assessed as being of low scientific significance. No further management or mitigation actions are recommended for these sites.	Transport	Detailed design

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
B5	Aboriginal heritage	<p>Should the requirement for impacts to AHIMS registered potential Aboriginal scarred tree 37-6-0681 be confirmed during the detailed design or construction phases of the proposal, a qualified arborist should be engaged to undertake a removal/relocation feasibility assessment of the tree. Subsequent mitigation will depend on the results on this assessment, as follows:</p> <ul style="list-style-type: none"> • Should the engaged arborist determine that 37-6-0681 is not suitable for relocation (i.e., due to the health of the tree and/or other factors), a detailed archival recording of the tree and its associated scars should be undertaken by a qualified archaeologist. A minimum of one RAP field representative will be invited to participate in the archival recording. • Should the engaged arborist determine that 37-6-0681 is suitable for removal/relocation, the relocation procedure outlined in section 10.1 of Appendix E should be employed. <p>All RAPs should be given the opportunity to review and comment on the arborist's relocation assessment report and if required, the removal methodology (including equipment), keeping place and ongoing access arrangements.</p>	Contractor	Detailed design / pre-construction
B6	Aboriginal heritage	Ten Aboriginal archaeological sites, listed in Table 6-37 of the REF will not be impacted by the proposal and should be conserved in situ. The protection of these sites to be retained and those sites identified for partial impact will occur in accordance with the measures outlined in the adopted Aboriginal Heritage Management Plan.	Contractor	Detailed design / pre-construction
B7	Aboriginal heritage	Cultural Site A: Gathering Place (Railway Bridge Camps) will be partially impacted by the proposal. Protective fencing should be erected between the zone of construction activity and the unimpacted area(s) of this site prior to any construction activities, with the unimpacted area(s) of the site to be clearly marked on all operational	Contractor	Pre-construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		maps as 'no go zones' of environmental and heritage sensitivities. The location of the fencing at Cultural Site A: Gathering Place (Railway Bridge Camps) should be confirmed by a cultural heritage values consultant to ensure that it accurately reflects the mapped site. Fencing should be maintained throughout the duration of works		
B8	Aboriginal heritage	An Aboriginal Heritage Management Plan (AHMP) will be prepared and implemented as part of the CEMP. The AHMP will provide specific guidance on measures and controls to be carried out to avoid and mitigate impacts on Aboriginal cultural heritage during construction. This will include protection measures to be applied during construction, as well as contractor training in general Aboriginal cultural heritage awareness and management of Aboriginal heritage values. Site locations will be identified in the proposal's CEMP and marked as environmentally sensitive areas or no-go zones.	Contractor	Detailed design / pre-construction
B9	Aboriginal heritage	All relevant staff and contractors working on site are to receive training to ensure awareness of the requirements of the AHMP and relevant statutory responsibilities. Site-specific training is to be given to personnel when working in the vicinity of identified Aboriginal heritage sites.	Contractor	Pre-construction
B10	Aboriginal heritage	In the event that construction works within the study area uncover any unexpected Aboriginal objects, the relevant provisions of Transport's Standard Management Procedure for Unexpected Heritage Items (Roads and Maritime, 2015) should be followed	Contractor	Pre-construction
B11	Aboriginal heritage	A project specific Aboriginal cultural heritage interpretation plan will be developed to promote understanding and awareness of the cultural heritage values of the study area. The strategy should be prepared in accordance with Transport's draft Heritage Interpretation Guideline (2016) in consultation with the RAPs and identified Aboriginal	Transport	Detailed design / pre-construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		<p>knowledge holders. The Aboriginal heritage interpretation project plan will include:</p> <ul style="list-style-type: none"> a. Interpretative signage (or similar) relevant to Cultural Site A: Gathering Place (Railway Bridge Camps) and how it sits within the wider cultural landscape. The content of the signage is to be developed by a cultural heritage specialist in consultation with the identified Aboriginal knowledge holders. b. Opportunities for input into (aesthetic) design elements of the proposal such as noise walls, bridge piers or abutments to include the interpretation of the Aboriginal cultural values of the area. c. Provisions for rehabilitation and revegetation of the impacted portion of Cultural Site A: Gathering Place (Railway Bridge Camps) with local Indigenous plant species. The identification of the plant species should be undertaken in consultation with the identified Aboriginal knowledge holders. Opportunities should be provided to local Aboriginal organisations for involvement and potential engagement in the revegetation and landscaping process. 		
B12	Aboriginal heritage	<p>An educational booklet (or similar) would be developed by a cultural heritage specialist on the cultural values and historical records relating to the broader cultural landscape of which Cultural Site A: Gathering Place (Railway Bridge Camps) is one element. As part of this process the photographic recording of the cultural landscape should occur prior to any construction impacts. The final content of the booklet (or similar) to be developed in consultation with the RAPs and identified Aboriginal knowledge holders. To assist in the production of the recommended educational booklet, photographic recording of the cultural landscape by a cultural values specialist at Cultural Site A: Gathering Place (Railway Bridge Camps) should occur prior to any construction impacts.</p>	Transport	Detailed design / Pre-construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
B13	Aboriginal heritage	In accordance with Requirement 16B of the Code of Practice, all stone artefacts recovered from the proposal area as part of the test excavation program detailed in the AAR is to be stored temporarily at AECOM's head office (Level 8, 420 George Street, Sydney) while options for their long term management are being investigated, as determined through consultation with RAPs. Requirement 26 of the Code of Practice provides standard procedures for the deposition of stone artefacts dealt with under AHIPs and the Code of Practice. These procedures will be strictly adhered to.	AECOM / Transport	Detailed design / Pre-construction
B14	Aboriginal heritage	Any Aboriginal objects removed from the study area as a result of test excavation and salvage activities authorised by the Code of Practice or an AHIP should be reburied upon completion of all post-excavation analyses, with the location of the reburial to be determined in consultation with RAPs	Transport	Construction
H1	Non-Aboriginal Heritage	A heritage management plan should be produced and included with in the Construction and Environment Management Plan measures to manage the identified heritage items in relation to the proposed works, including: <ul style="list-style-type: none"> • Heritage protection measures. • An induction program for construction personnel on the management of non-Aboriginal heritage values. • Procedures to be implemented if previously unidentified non-Aboriginal relics or heritage items are discovered during construction, in accordance with the Transport's Standard Management Procedure - Unexpected Archaeological Finds. 	Contractor	Construction
H2	Non-Aboriginal Heritage	If the use of vibration intensive plant cannot be avoided within the minimum working distance for cosmetic damage the following procedure would occur as a minimum:	Contractor	Detailed design and Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		<ul style="list-style-type: none"> Notification of the works to the affected residents and community Works would not proceed until attended vibration measurements are undertaken. Vibration monitors are to provide real-time notification of exceedances of levels approaching cosmetic damage criteria. <p>If ongoing works are required a temporary relocatable vibration monitoring system would be installed, to warn operators (via flashing light, audible alarm, short message service (SMS) etc) when vibration levels are approaching the cosmetic damage objective.</p>		
H3	Non-Aboriginal Heritage	Singleton Council should be informed of the proposed impacts to heritage items and their records relating to the corresponding LEP listings should be updated accordingly.	Transport	Construction
H4	Non-Aboriginal Heritage	Should any heritage items, archaeological remains or potential relics of Non-Aboriginal origin be encountered, then construction work that might affect or damage the material will cease and notification provided to Transport's as per Transport Standard Management Procedure - Unexpected Archaeological Finds. Work will only recommence once the requirements of that Procedure have been satisfied.	Contractor	Construction
H5	Non-Aboriginal Heritage	Transport will investigate the need to salvage heritage fabric from listed items removed by the proposal for possible reuse in heritage reinterpretation in consultation with Singleton Council.	Transport	Detailed design
H6	Non-Aboriginal Heritage	An archival recording of the Former Pumping Station (I21) will be prepared prior to the removal of the item. The recording will be prepared in accordance with guidelines published by the Heritage Division, Department of Premier & Cabinet.	Contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
H8	Non-Aboriginal Heritage	Prior to ground disturbance impacts at the Former Pumping Station (I21), a permit under Section 140 of the <i>Heritage Act 1977</i> would be obtained given the potential for archaeological relics at this location.	Transport / Contractor	Detailed design / Construction
A1	Air quality	<p>An Air Quality Management Plan will be prepared and implemented as part of the CEMP. The Plan will identify:</p> <ul style="list-style-type: none"> • Potential sources of air pollution (such as dust, vehicles transporting waste, plant and equipment) during construction • Air quality management objectives consistent with any relevant published EPA and/or DPIE guidelines • Mitigation and suppression measures to be implemented, such as spraying or covering exposed surfaces, provision of vehicle clean down areas, covering of loads, street cleaning, use of dust screens, maintenance of plant in accordance with manufacturer's instructions • Methods to manage works during strong winds or other adverse weather conditions • A progressive rehabilitation strategy for exposed surfaces • When the air quality, suppression and management measures need to be applied, who is responsible, and how effectiveness will be assessed. • Community notification and complaint handling procedures 	Construction contractor	Construction
A2	Air quality	As part of the AQMP, a monitoring program would be developed for monitoring construction dust from the proposal. The monitoring plan would be implemented prior to construction and during the construction period to assess effective implementation of air quality safeguards, identify any unexpected or inadvertent impacts, and identify recommended revisions or improvements.	Construction contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
LV1	Landscape and visual	All plant material to be locally sourced (seed collection preferred), with any seed collection to commence within three months of construction contract award, where possible.	Transport	Detailed design
LV2	Landscape and visual	<p>An Urban Design Plan will be prepared as part of the CEMP. The Plan will include:</p> <ul style="list-style-type: none"> • Location and identification of vegetation in the proposal area to be retained and proposed landscaped areas • Details of the staging of built elements including retaining walls, bridges and noise walls • Details of the staging of landscape works • Maintenance measures for landscaped or rehabilitated areas, including timings • A landscape monitoring program including an inspection program with frequency. 	Construction contractor	Pre-construction
P1	Property acquisition	Property acquisition will be carried out in accordance with the <i>Land Acquisition Information Guide (Roads and Maritime, 2014)</i> and the <i>Land Acquisition (Just Terms Compensation) Act 1991</i> .	Roads and Maritime	Detailed design
P2	Property acquisition	Transport will complete property adjustments including fencing, driveways/access and other property infrastructure impacted by the proposal in consultation with affected property owners.	Roads and Maritime	Detailed design
P3	Property acquisition	Transport will investigate the possibility of licencing land beneath the bridge to impacted landholders to enable continued access for fragmented properties.	Transport	Detailed design
SE1	Social and economic	<p>Landowner surveys will be carried out to:</p> <ul style="list-style-type: none"> • Gather information about the current use and activities carried out on their property 	Transport	Detailed design

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		<ul style="list-style-type: none"> Identify how the proposal would affect ongoing land use and activities on their property Inform the development of appropriate mitigation measures. 		
SE2	Social and economic	<p>A Communication Plan (CP) will be prepared and implemented as part of the CEMP to ensure provision of timely and accurate information to the community during construction. The CP will include (as a minimum):</p> <ul style="list-style-type: none"> Mechanisms to provide details and timing of proposed activities to affected residents, including changed traffic and access conditions Contact name and number for complaints How the project webpage will be maintained for the duration of the proposal. Minimum consultation activities to be carried out A complaints handling procedure. 	Transport / construction contractor	Detailed design and construction
SE3	Social and economic	<p>Transport will develop a signage strategy for the entrances to Singleton, in consultation with Singleton Council to encourage motorists to visit Singleton. This will include signage showing:</p> <ul style="list-style-type: none"> The travel distances and estimated times for travelling routes via the bypass compared to travelling via the Singleton town centre Services and facilities available within the Singleton township Any visitor attractions within the Singleton township 	Transport	Detailed design
SE4	Social and economic	Transport will engage with Singleton Council and local businesses regarding the progress of the proposal to allow businesses time to prepare for changed traffic conditions through the town.	Transport	Detailed design and construction
M1	Resource use	Use of recycled-content materials would be considered during the detailed design.	Transport	Detailed Design
M2	Construction waste	A Waste Management Plan (WMP) will be prepared and implemented as part of the CEMP. The WMP will provide specific guidance on measures and controls to be implemented to support minimising the	Construction contractor	Pre-construction and construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
		<p>amount of waste produced and appropriately handle and dispose of unavoidable waste.</p> <p>The WMP will include, but not necessarily be limited to:</p> <ul style="list-style-type: none"> • Measures to avoid and minimise waste associated with the project. • Classification of wastes generated by the project and management options (re-use, recycle, stockpile, disposal). • Classification of wastes received from off-site for use in the project and management options. • Identifying any statutory approvals required for managing both on and off-site waste, or application of any relevant resource recovery exemptions. • Procedures for storage, transport and disposal. • Monitoring, record keeping and reporting, including any documentation management obligations arising from resource recovery exemptions. <p>The WMP would be prepared taking into account the <i>Roads and Maritime Environmental Procedure – Management of Wastes on Roads and Maritime Services Land</i> and relevant Transport Waste Fact Sheets.</p>		
M3	Construction waste	<p>The following resource management hierarchy principles will be followed:</p> <ul style="list-style-type: none"> • Avoid unnecessary resource consumption as a priority. • Avoidance will be followed by resource recovery (including reuse of materials, reprocessing, and recycling and energy recovery). • Disposal will be a last resort (in accordance with the Waste Avoidance and Resource Recovery Act 2001). 	Construction contractor	Pre-construction and construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
CC1	Climate change	Construction equipment, plant and vehicles will be appropriately sized for the task, serviced frequently and will not be left idling when not in use.	Construction	Construction
R1	Hazard and risk	Emergency response plans will be incorporated into the construction environmental management plan.	Construction contractor	Pre-construction and construction
R2	Hazard and risk	<p>A Hazard and Risk Management Plan will be prepared and implemented as part of the CEMP. The Plan will identify:</p> <ul style="list-style-type: none"> • Details of hazards and risks associated with the activity • Measures to be implemented during construction to minimise these risks • Record keeping arrangements, including information on the materials present on the site, material safety data sheets, and personnel trained and authorised to use such materials • A monitoring program to assess performance in managing the identified risks, including "equipment checking and maintenance requirements contingency measures to be implemented in the event of unexpected hazards or risks arising, including emergency situations." 	Construction contractor	Pre-construction and construction

5.3 Licensing and approvals

A summary of notification, licences and approvals required for the proposal, prior to construction or the start of certain activities, are outlined below in Table 5-2.

Table 5-2: Summary of licensing and approval required

Instrument	Requirement	Timing
<i>Protection of the Environment Operations Act 1997 (s43)</i>	Environment protection licence (EPL) for scheduled activities from the EPA.	Prior to start of the activity.
<i>Fisheries Management Act 1994 (s199)</i>	Notification to the Minister for Primary Industries prior to any dredging or reclamation works.	A minimum of 28 days prior to the start of work.
<i>Fisheries Management Act 1994 (s219)</i>	Permit to obstruct the free passage of fish (temporary or permanent) from the Minister for Primary Industries.	Prior to start of the activity.
<i>National Parks and Wildlife Act 1974 (s90)</i>	Aboriginal heritage impact permit from the Chief Executive of Heritage Division, Department of Premier & Cabinet.	Prior to start of the activity.
<i>Crown Lands Act 1989 (s6)</i>	Licence to occupy areas of Crown land.	Prior to start of the activity
<i>Heritage Act 1977</i>	Section 140 excavation permit for ground disturbance impacts at the Former Pumping Station (I21).	Prior to start of the activity.

6 References

AECOM 2013, *HW (New England Highway) – Singleton Bypass: Preliminary Feasibility Assessment Report*. Report prepared for Roads and Maritime Service, June 2013.

AECOM 2015, *Preliminary Environmental Investigation Report*

Department of Environment, Climate Change and Water 2011, *Road Noise Policy*, DECCW, Sydney

Roads and Maritime 2016, *Preferred Option Report*, NSW Government

Roads and Maritime 2015, *New England Highway Singleton Bypass Options Assessment – Route Options Identification Report*, NSW Government

Roads and Maritime 2011, *Procedure for Aboriginal Cultural Heritage Consultation and Investigation*, NSW Government

Transport for NSW 2019, *New England Highway bypass of Singleton, Review of Environmental Factors*, December 2019

Appendix A

Community update

New England Highway – Singleton Bypass

Project Update - Concept Design and Review of Environmental Factors

December 2019



Artist impression of the Singleton bypass northern connection, looking south.

Submissions invited on the concept design and review of environmental factors (REF) for the Singleton bypass.

The NSW Government has committed \$92 million towards the Singleton bypass under Rebuilding NSW. The bypass will improve travel times, freight efficiency and safety for local and interstate motorists.

A concept design and environmental assessment have been prepared for the bypass to identify potential impacts and mitigation activities. The community and stakeholders are invited to provide feedback by **5pm on Sunday 1 March 2020**.

Project background

The New England Highway is part of the inland Sydney to Brisbane National Land Transport Network and the primary route connecting the Upper Hunter with Maitland and Newcastle.

The highway passes through the centre of Singleton and carries around 26,000 vehicles, including more than 3700 heavy vehicles, each day.

Traffic volumes are predicted to increase in the next 25 years. The planned bypass of Singleton would improve the movement of freight and journeys for current and future traffic demands.

A preferred option for the bypass was announced in 2016 and involves building a new section of highway west of Singleton across the floodplain, starting near Newington Lane and rejoining the New England Highway north of McDougalls Hill.



Visit our new
interactive portal at
rms.work/singleton
to find out more
about the REF.

New England Highway bypass of Singleton



A Northern connection



B Gowrie Gates connection



C Putty Road connection



D Southern connection



The proposal

The proposed Singleton bypass would include:

- about eight kilometres of new highway with a single lane in each direction
- a 1.7 kilometre bridge over the Main Northern Railway, Doughboy Hollow and Hunter River floodplains
- connections at the southern and northern ends of the bypass and at Putty Road and Gowrie Gates.

Alternative route options considered

Transport for NSW carried out multiple investigations to identify the preferred route option for a New England Highway bypass of Singleton.

Our initial investigations considered multiple corridors for the bypass, with subsequent investigations considering three shortlisted route options.

Selection of the preferred route option took into account social, environmental and economic factors as well as community and stakeholder feedback received during a public display period in 2015. When considering these factors, the preferred route was identified as the most suitable option.

Key Benefits

The proposed bypass would:

- improve traffic flow and travel times for freight and general traffic along the New England Highway travelling through Singleton
- improve safety through Singleton town centre by reducing traffic including heavy freight
- improve the amenity of the Singleton town centre by removing significant amounts of through traffic.

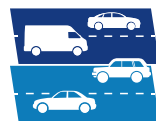
Review of Environmental Factors

Transport for NSW has prepared a Review of Environmental Factors (REF) to determine the potential environmental and social impacts and proposed mitigation measures for the Singleton bypass.

The REF is made available for community members and other stakeholders to review and submit their comments and questions. Each submission received through the REF process would be considered and would assist the planning and delivery of the project.

The REF explains the proposed method to construct the bypass and addresses how the work will be managed, including the proposed methods used to minimise environmental impacts on:

- the local community through traffic, access, noise and vibration
- flora and fauna
- soils and water quality
- socio-economic
- flooding.



Ease congestion

and deliver better, more reliable trips



Improve safety

on the existing highway



Heavy vehicle reduction

through town centre



Motorists will
save about
6 minutes
in travel time



Bypass
up to 5 sets
of traffic lights



Remove about
15,000 vehicles
per day from
town centre

Have your say

Transport for NSW is inviting feedback from the community about the Singleton bypass concept design and REF.

There are a number of ways you can get involved, including visiting an information session, commenting on the design via the interactive portal or by calling or emailing the project team.

Submissions close on Sunday 1 March 2020 at 5pm.

Community information displays

To provide an opportunity for the community to view the concept design and REF, staffed displays are being held at the Quest Hotel in Singleton.

You are invited to drop in at any time during these sessions and speak with members of the project team.

Thursday 30 January 2020

10.30am–1.30pm

Thursday 30 January 2020

4pm–7pm

Thursday 6 February 2020

10.30am–1.30pm

Thursday 6 February 2020

4pm–7pm

Tuesday 11 February 2020

10.30am–1.30pm

Tuesday 11 February 2020

4pm–7pm

Next steps

After the submission period for the REF closes, a report responding to submissions will be drafted and shared with the community.

We will consider all feedback received during the display period in the next stage of the project.

Next steps



*Timing for construction of the bypass has not been confirmed and is subject to approval and funding availability.

Contact us

If you have any questions or would like more information please contact our project team:



1800 991 254 (toll free)



singleton.bypass@rms.nsw.gov.au



rms.work/singleton



Joel Rosendahl,
Transport for NSW,
Locked Bag 2030 Newcastle NSW 2300



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 991 254.



December 2019

RMS.19.1496

Transport for NSW is subject to the Privacy and Personal Information Protection Act 1998 ("PIIP Act") which requires that we comply with the Information Privacy Principles set out in the PIIP Act. All information in correspondence is collected for the sole purpose of delivering this project. The information received, including names and addresses of respondents, may be published in subsequent documents unless a clear indication is given in the correspondence that all or part of that information is not to be published. Otherwise Transport for NSW will only disclose your personal information, without your consent, if authorised by the law. Your personal information will be held by Transport for NSW at 27 Argyle Street, Parramatta NSW 2150. You have the right to access and correct the information if you believe that it is incorrect.

Appendix B

Respondents

Respondents submission numbers

Respondent	Submission No.	Section number where issues are addressed
Individual	01	Section 2.3.1, 2.3.2, 2.3.3, 2.5.1, 2.7.1, 2.10.1, 2.11.1, 2.14.1
Individual	02	Section 2.3.1, 2.3.3, 2.6.2, 2.7.2
Individual	03	Section 2.2.4, 2.3.1, 2.3.2, 2.3.4, 2.5.1, 2.5.2, 2.5.5, 2.6.2, 2.6.3, 2.7.1, 2.7.2, 2.9.1, 2.10.1, 2.14.1, 2.15.2, 2.16.1, 2.17.1, 2.17.3
NSW EPA	04	Section 2.4.1, 2.7.3, 2.10.2, 2.12.1, 2.13.1, 2.15.2
The McCloy Group	05	Section 2.2.3, 2.5.3, 2.5.4, 2.5.5, 2.9.1, 2.15.2
Individual	06	Section 2.17.2
Individual	07	Section 2.6.1
Individual	08	Section 2.2.1, 2.3.5, 2.5.5, 2.17.3
Individual	09	Section 2.4.1
Individual	10	Section 2.2.1, 2.6.1
Individual	11	Section 2.2.1
Individual	12	Section 2.2.3
Individual	13	Section 2.2.2
Individual	14	Section 2.17.2
Individual	15	Section 2.2.1, 2.4.2, 2.17.4
Individual	16	Section 2.2.1, 2.3.2, 2.4.2, 2.17.3, 2.17.4
Individual	17	Section 2.2.2
Individual	18	Section 2.5.2
Individual	19	Section 2.2.1, 2.3.2, 2.7.1, 2.12.1, 2.17.3
Individual	20	Section 2.5.3, 2.15.2, 2.16.1
Individual	21	Section 2.8.1
Individual	22	Section 2.2.1, 2.6.2
Individual	23	Section 2.2.1, 2.2.3
Individual	24	Section 2.2.2
Individual	25	Section 2.2.1
Individual	26	Section 2.2.1
Individual	27	Section 2.4.1
Individual	28	Section 2.2.1, 2.3.2
Individual	29	Section 2.2.5, 2.17.3
Individual	30	Section 2.17.4

Respondent	Submission No.	Section number where issues are addressed
Individual	31	Section 2.2.1
Individual	32	Section 2.2.1
Individual	33	Section 2.2.1
Individual	34	Section 2.2.1
Individual	35	Section 2.2.1
Individual	36	Section 2.2.4, 2.4.1
Individual	37	Section 2.2.1, 2.17.4
Individual	38	Section 2.2.1, 2.4.2
Individual	39	Section 2.2.1
Individual	40	Section 2.3.1
Individual	41	Section 2.2.1
Individual	42	Section 2.4.1
Individual	43	Section 2.2.1, 2.6.1
Individual	44	Section 2.2.1
Individual	45	Section 2.2.1, 2.6.1
Individual	46	Section 2.2.1, 2.3.5
Individual	47	Section 2.2.1, 2.3.5
Individual	48	Section 2.2.1, 2.2.5
Individual	49	Section 2.8.2
Individual	50	Section 2.2.1
Individual	51	Section 2.2.1
Individual	52	Section 2.17.1
Individual	53	Section 2.2.1
Individual	54	Section 2.2.1, 2.6.1
Individual	55	Section 2.2.1, 2.6.1
Individual	56	Section 2.2.1, 2.3.5, 2.4.2, 2.6.1, 2.17.4
Individual	57	Section 2.2.1
Individual	58	Section 2.2.1, 2.6.1
Individual	59	Section 2.2.1
Individual	60	Section 2.4.1
Individual	61	Section 2.4.1, 2.9.2
Individual	62	Section 2.4.1
Individual	63	Section 2.2.1, 2.17.4
Individual	64	Section 2.2.1, 2.8.2

Respondent	Submission No.	Section number where issues are addressed
Individual	65	Section 2.2.1, 2.6.1
Individual	66	Section 2.2.3
Individual	67	Section 2.9.3
Individual	68	Section 2.2.1, 2.3.2
Individual	69	Section 2.2.1, 2.2.5, 2.4.2, 2.6.1, 2.17.3, 2.17.4
Individual	70	Section 2.4.1
Individual	71	Section 2.3.2, 2.3.5, 2.17.3
Individual	72	Section 2.4.1
Individual	73	Section 2.2.1
Individual	74	Section 2.2.1, 2.4.2
Individual	75	Section 2.2.1, 2.17.3, 2.17.4
Individual	76	Section 2.2.1, 2.4.2, 2.17.4
Individual	77	Section 2.2.1
Individual	78	Section 2.2.1, 2.4.2, 2.6.1
Individual	79	Section 2.2.1
Individual	80	Section 2.2.1
Individual	81	Section 2.2.2
Individual	82	Section 2.2.1, 2.4.2, 2.6.1
Individual	83	Section 2.4.1
Individual	84	Section 2.2.1
Individual	85	Section 2.2.1
Individual	86	Section 2.2.1
Individual	87	Section 2.2.1
Individual	88	Section 2.2.1, 2.17.3
Individual	89	Section 2.2.1, 2.2.5, 2.4.1
Individual	90	Section 2.4.1
Individual	91	Section 2.2.1
Individual	92	Section 2.2.1
Individual	93	Section 2.2.1, 2.6.1
Individual	94	Section 2.4.1
Individual	95	Section 2.4.1
Individual	96	Section 2.2.1
Individual	97	Section 2.2.1, 2.17.4
Individual	98	Section 2.2.1

Respondent	Submission No.	Section number where issues are addressed
Individual	99	Section 2.2.1, 2.7.2, 2.8.2, 2.17.2
Individual	100	Section 2.2.2
Individual	101	Section 2.4.1
Individual	102	Section 2.2.1
Individual	103	Section 2.2.1
Individual	104	Section 2.2.1
Individual	105	Section 2.2.2
Individual	106	Section 2.2.1, 2.4.2
Individual	107	Section 2.2.1, 2.6.1
Individual	108	Section 2.4.1
Individual	109	Section 2.2.1, 2.2.3, 2.3.2, 2.5.5
Individual	110	Section 2.2.1, 2.2.2, 2.4.2
Individual	111	Section 2.2.1, 2.17.4
Individual	112	Section 2.7.1
Individual	113	Section 2.2.1, 2.4.2, 2.6.1
Individual	114	Section 2.2.1
Individual	115	Section 2.2.1, 2.4.2
Individual	116	Section 2.2.1, 2.3.2, 2.4.2, 2.17.3
Individual	117	Section 2.3.2, 2.5.3, 2.7.2, 2.15.1, 2.15.2, 2.16.1
Individual	118	Section 2.9.4
Individual	119	Section 2.2.2
Individual	120	Section 2.2.1
Individual	121	Section 2.2.1, 2.5.5, 2.17.4
Individual	122	Section 2.2.5
Individual	123	Section 2.2.1, 2.2.5
Individual	124	Section 2.4.1
Individual	125	Section 2.2.1
Individual	126	Section 2.4.1
Individual	127	Section 2.2.1
Individual	128	Section 2.4.1
Individual	129	Section 2.4.1
Individual	130	Section 2.2.1
Individual	131	Section 2.2.1, 2.3.5
Individual	132	Section 2.2.1

Respondent	Submission No.	Section number where issues are addressed
Individual	133	Section 2.2.1
Individual	134	Section 2.17.3
Individual	135	Section 2.2.1
Individual	136	Section 2.3.2
Individual	137	Section 2.2.1, 2.17.4
Individual	138	Section 2.2.1
Individual	139	Section 2.2.1
Individual	140	Section 2.2.1, 2.17.4
Individual	141	Section 2.2.1
Individual	142	Section 2.2.1, 2.3.5
Individual	143	Section 2.2.1, 2.6.1
Individual	144	Section 2.2.2, 2.3.2, 2.4.2, 2.9.1, 2.17.3
Individual	145	Section 2.17.2
Individual	146	Section 2.2.1, 2.6.1, 2.17.3
Individual	147	Section 2.7.2
Individual	148	Section 2.3.3
Individual	149	Section 2.2.2, 2.5.2, 2.7.2, 2.12.1
Individual	150	Section 2.2.1
Individual	151	Section 2.2.1, 2.17.4
Individual	152	Section 2.2.1
Individual	153	Section 2.2.3
Singleton Council	154	Section 3

Appendix C

Landowner surveys

Landowner survey results

In order to identify the impacts of property acquisitions, 26 landowners that would be directly affected by the proposal were surveyed. This appendix provides an overview of the responses to the landowner survey.

Survey approach

A landowner survey was undertaken to gain a better understanding of the main issues, perceptions and concerns of landowners in regard to the construction and operation of the proposal. The survey also provided information about the current use and activities carried out on the property, and how the proposal would affect ongoing land use and activities on the property.

Surveys were undertaken over eight days, with 26 landowners being surveyed. The landowner surveys were carried out from 15 to 18, 23 to 25 and 31 October 2019 by a team consisting of a community engagement consultant and the project manager. Landowners who would be directly impacted by the proposal were surveyed.

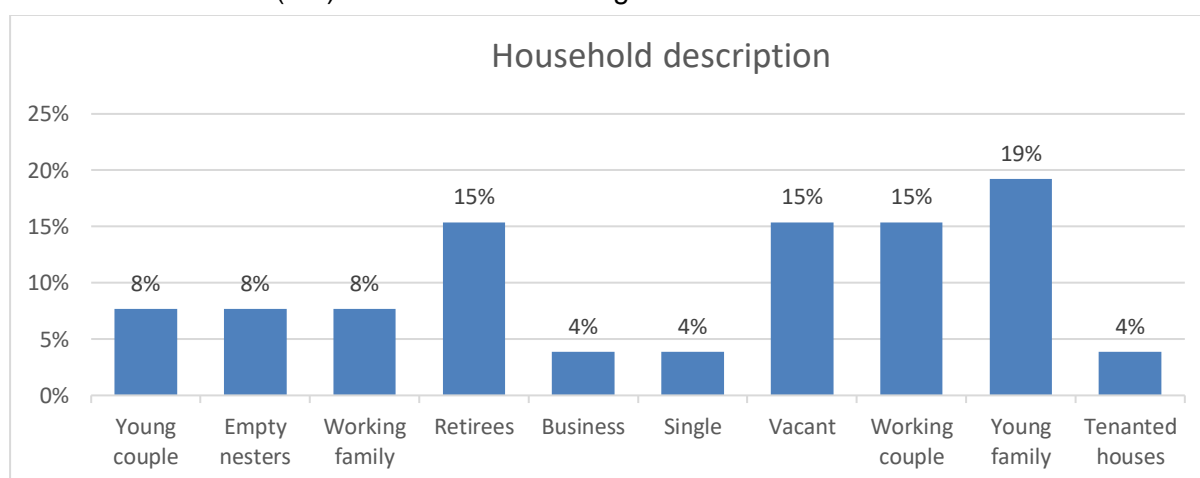
Findings from the landowner surveys have been analysed and summarised below.

Survey results

Household description

Landowners were asked to describe their household.

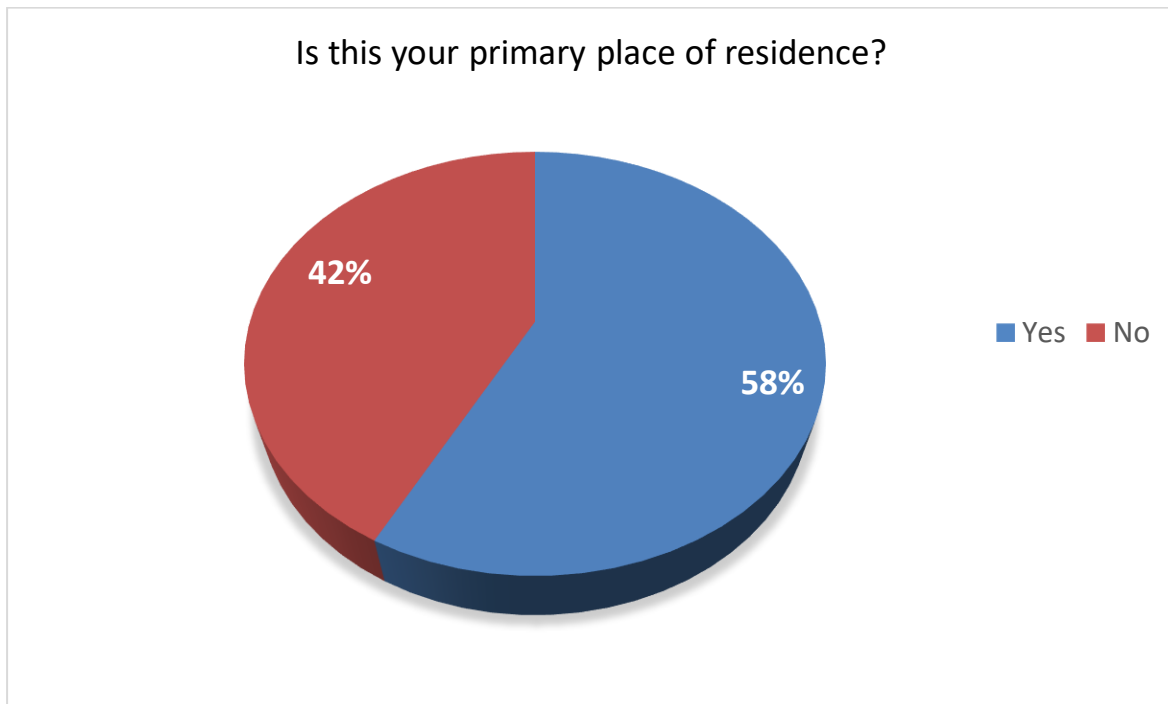
- Two landowners (8%) were a young couple
- Two landowners (8%) were empty nesters
- Two landowners (8%) were a working family
- Four landowners (15%) were retirees
- One landowner (4%) was a business
- One landowner (4%) was a single
- Four landowners (15%) were vacant
- Four landowners (15%) were a working couple
- Five landowners (19%) were a young family
- One landowner (4%) was tenanted housing.



Primary residence

Landowners were asked if this were their primary residence.

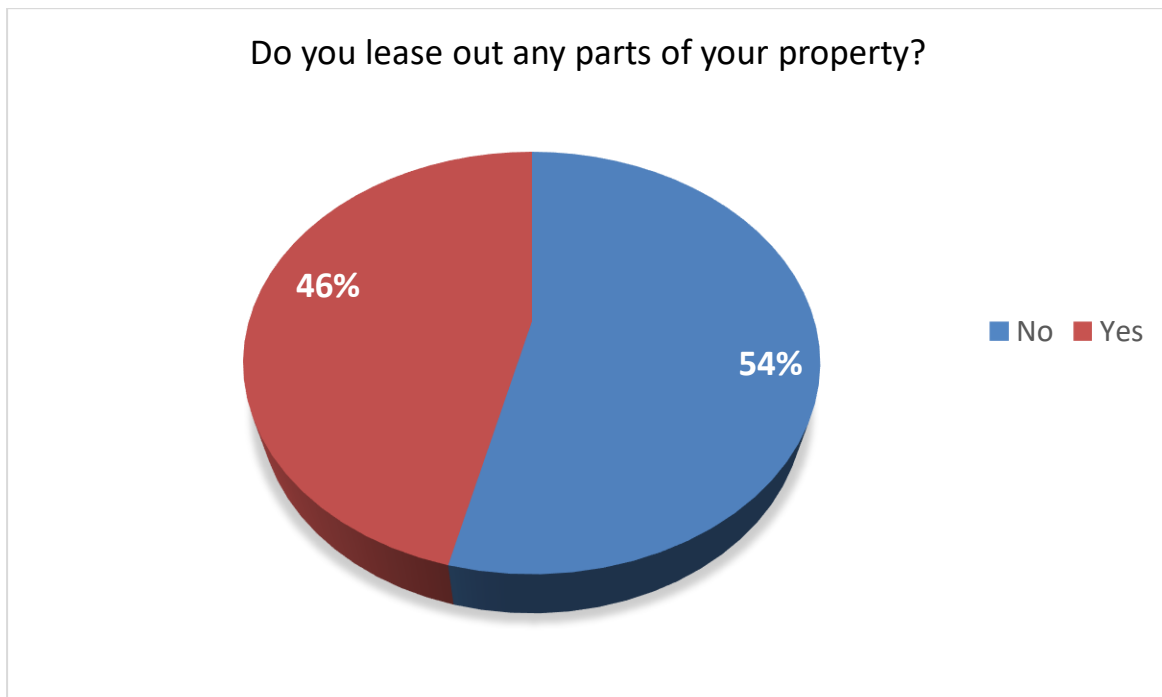
- Fifteen landowners (58%) said this was their primary residence
- Eleven landowners (42%) said this was not their primary residence.



Lease

Landowners were asked if they leased out any parts of their property.

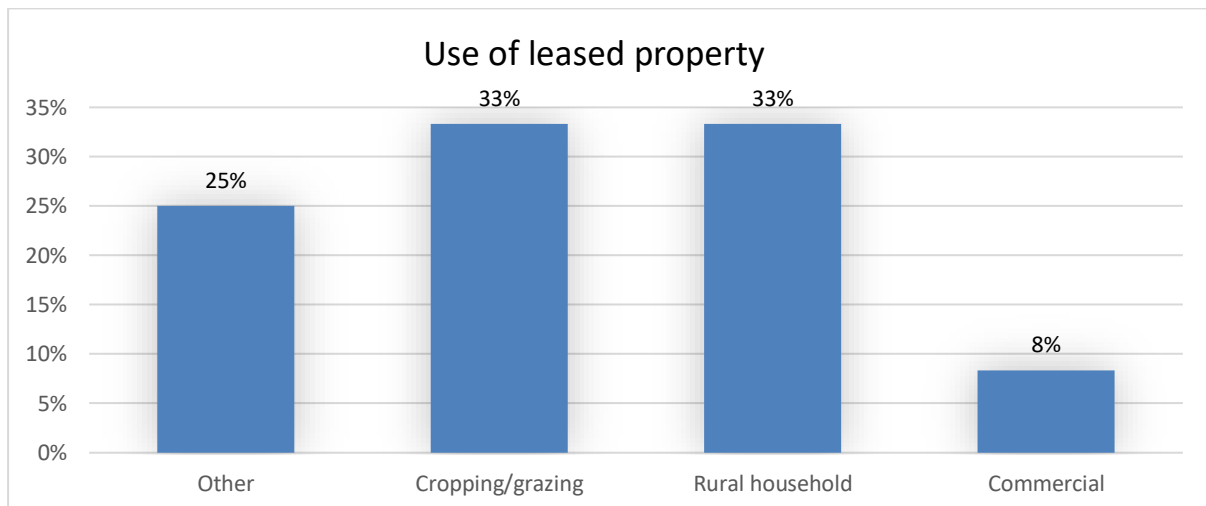
- Twelve landowners (46%) leased out parts of their property
- Fourteen landowners (54%) did not lease out parts of their property.



Leased Property

Landowners were asked the use of the leased property.

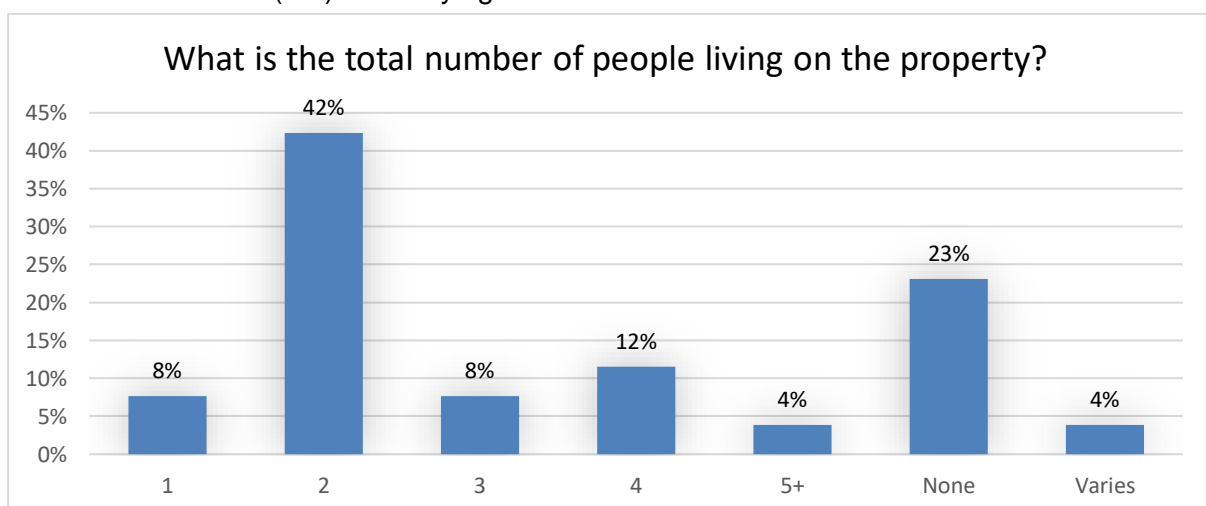
- Three landowners (25%) leased property for other purposes
- Four landowners (33%) leased property for cropping/grazing
- Four landowners (33%) leased property for a rural household
- One landowner (8%) leased property for commercial purposes.



Number of residents

Landowners were asked the total number of people living on the property.

- Six landowners (23%) had no residents
- Two landowners (8%) were single person households
- Eleven landowners (42%) had two residents
- Two landowners (8%) had three residents
- Three landowners (12%) had four residents
- One landowner (4%) had five or more residents
- One landowner (4%) had varying number of residents.



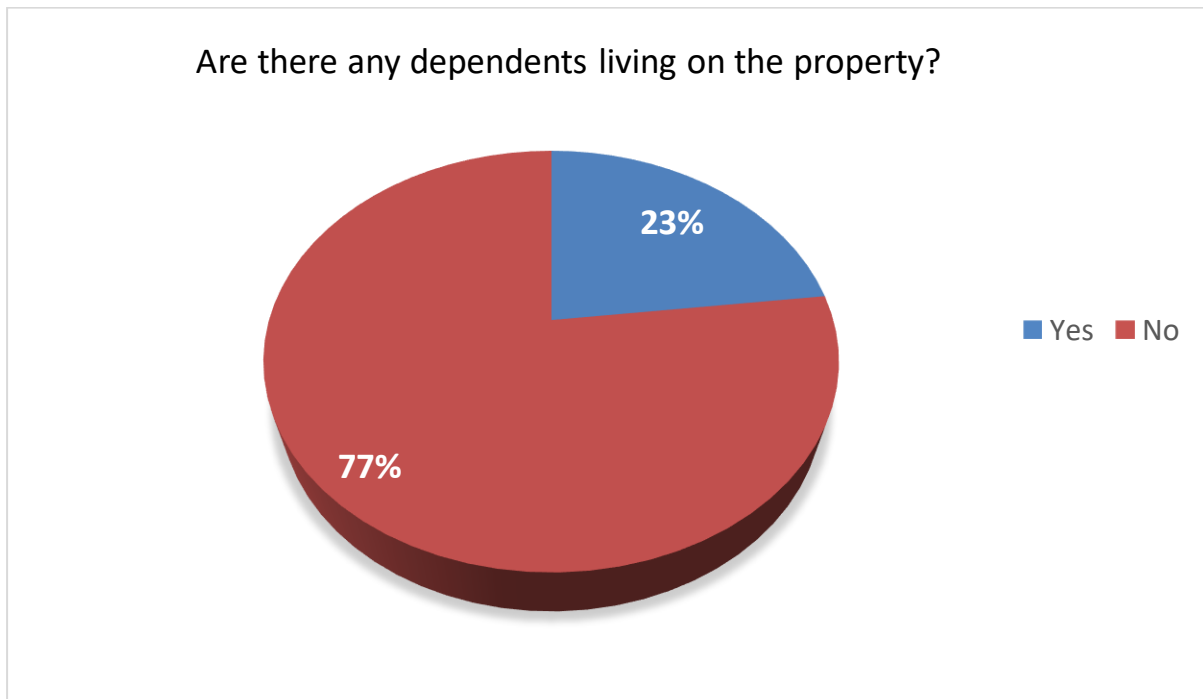
Dependents

New England Highway bypass of Singleton

Submissions Report

Landowners were asked if there were any dependents living on the property.

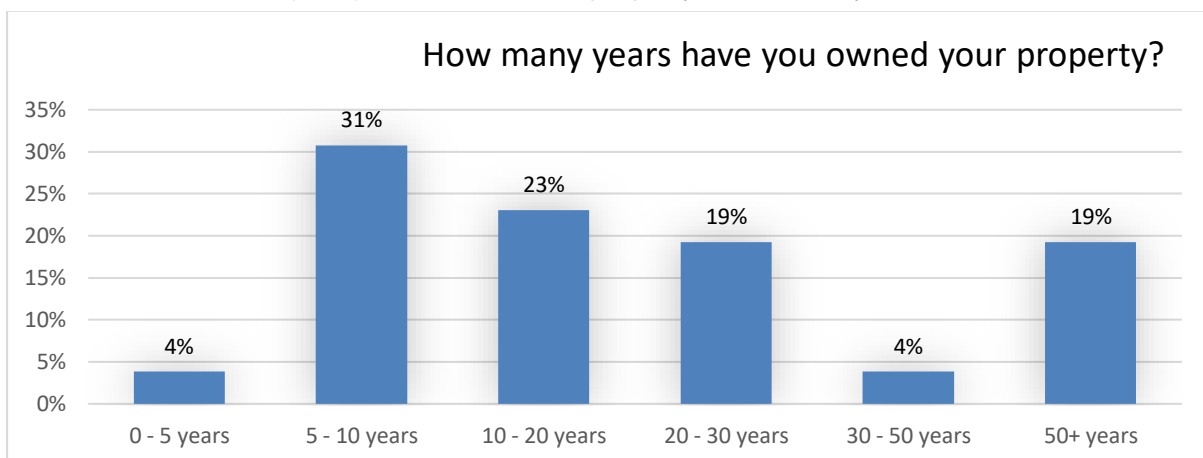
- Six landowners (23%) had depends living on the property
- Twenty landowners (77%) did not have any dependents living on the property.



Years owned

Landowners were asked how long they had owned their property for.

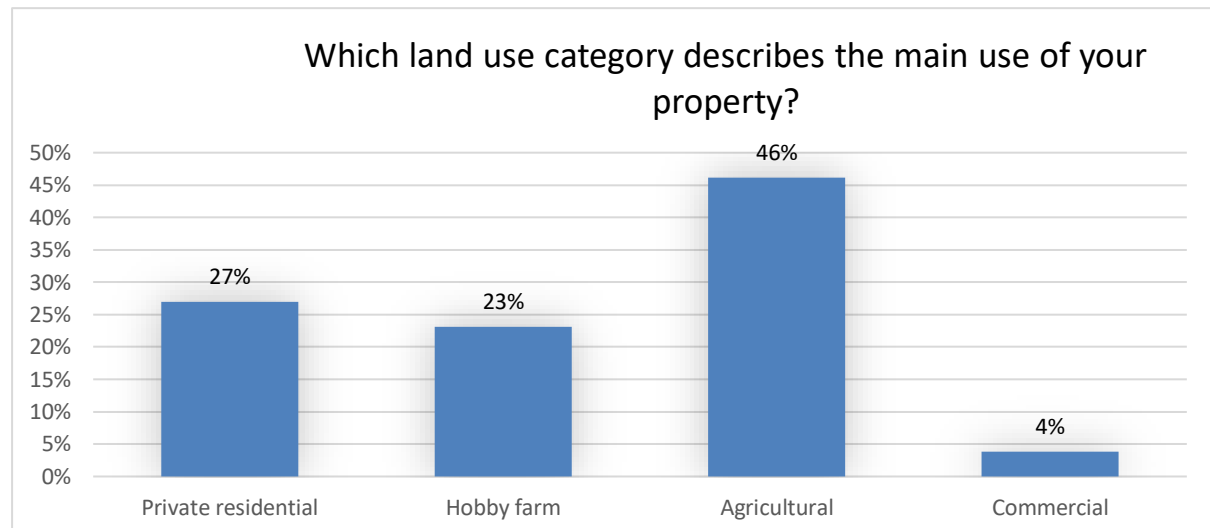
- One landowner (4%) had owned their property for up to five years
- Eight landowners (31%) had owned their property for five to 10 years
- Six landowners (23%) had owned their property for 10 to 20 years
- Five landowners (19%) had owned their property for 20 to 30 years
- One landowner (4%) had owned their property for 30 to 50 years
- Five landowners (19%) had owned their property for over 50 years.



Land use

Landowners were asked the land use category which described the main use of their property.

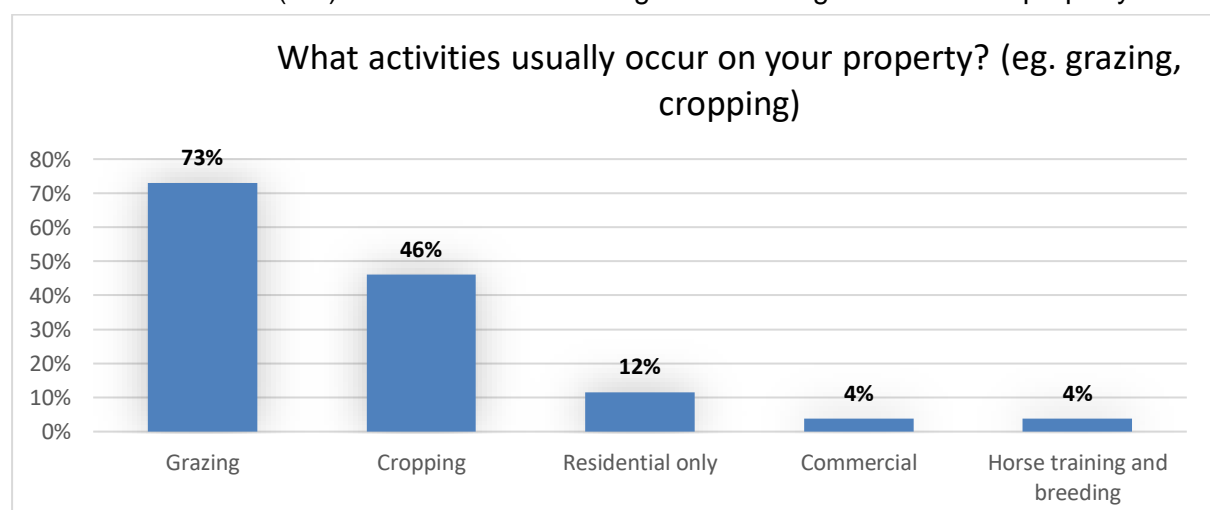
- Seven landowners (27%) described their property as private residential
- Six landowners (23%) described their property as a hobby farm
- Twelve landowners (46%) described their property as agricultural
- One landowner (4%) described their property as commercial.



Activities

Landowners were asked about activities that usually occurred on their property (eg grazing, cropping).

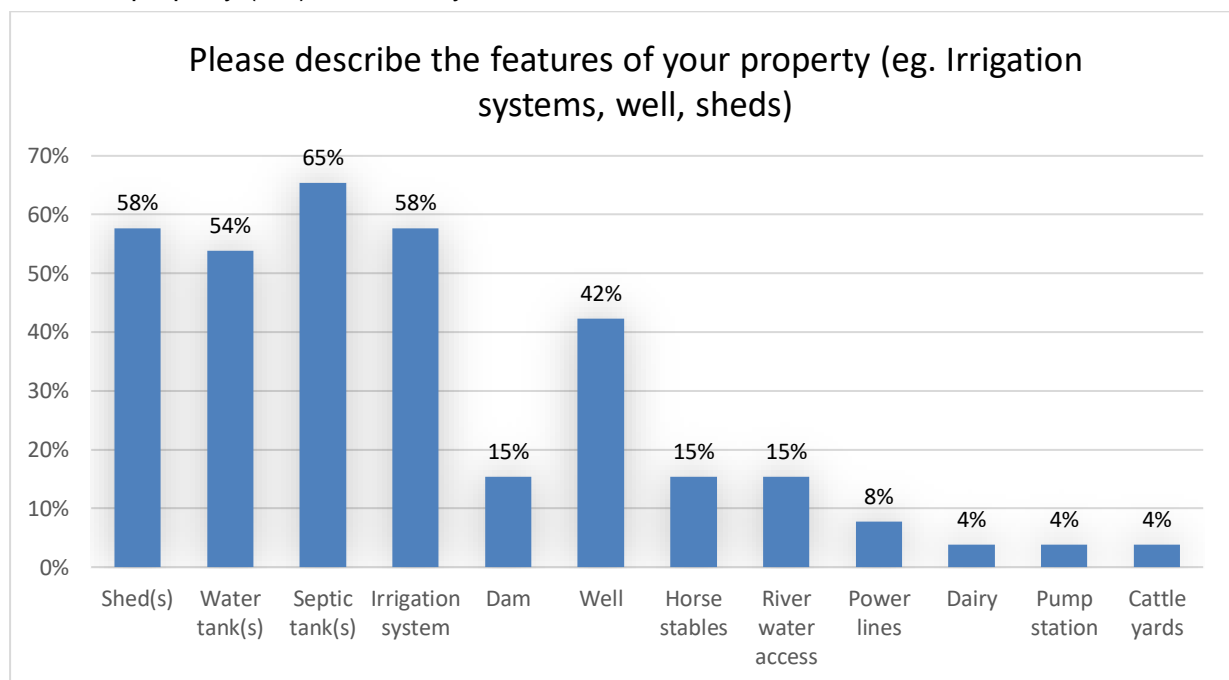
- Nineteen landowners (73%) indicated grazing occurred on their property
- Twelve landowners (46%) indicated cropping occur on their property
- Three landowners (12%) did not have activities on their property (residential only)
- One landowner (4%) indicated a commercial property
- One landowner (4%) indicated horse training and breeding occur on their property.



Features

Landowners were asked to describe the main features of their property (eg irrigation systems, well, sheds).

- Fifteen properties (58%) had shed(s)
- Fourteen properties landowners' (54%) had water tank(s)
- Seventeen properties (65%) had septic tank(s)
- Fifteen properties (58%) had an irrigation system
- Four properties (15%) had a dam
- Eleven properties (42%) had a well
- Four properties (15%) had horse stables
- Four properties (15%) had river water access
- Two properties (8%) had power lines
- One property (4%) had a dairy
- One property (4%) had a pump station
- One property (4%) had cattle yards.

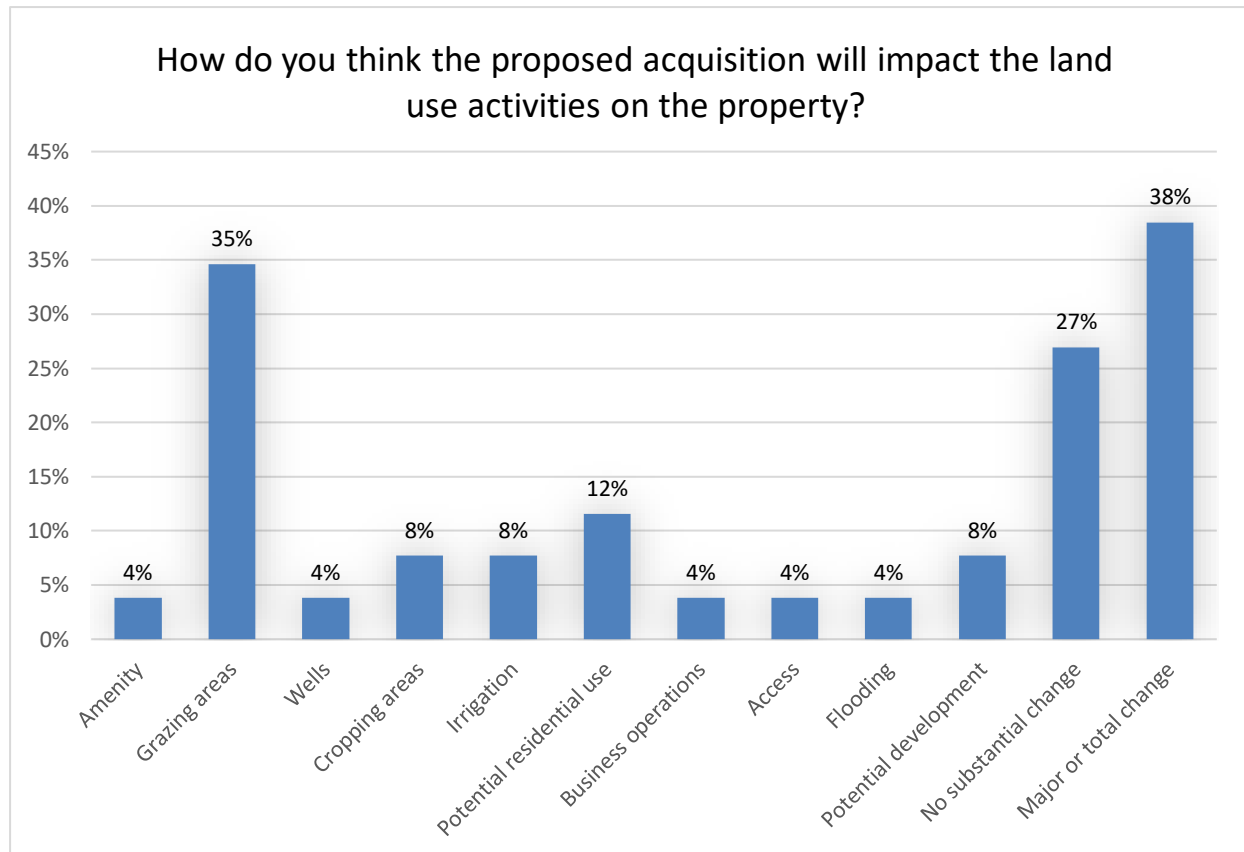


Impacts to land use

Landowners were asked how they thought the proposed acquisition would impact the land use activities on their property.

- One landowner (4%) anticipated amenity impacts
- Nine landowners (35%) anticipated grazing area impacts
- One landowner (4%) anticipated well impacts
- Two landowners (8%) anticipated cropping area impacts
- Two landowners (8%) anticipated irrigation impacts
- Three landowners (12%) anticipated residential use impacts
- One landowner (4%) anticipated business impacts

- One landowner (4%) anticipated access impacts
- One landowner (4%) anticipated flooding impacts.
- Two landowners (8%) anticipated potential development impacts
- Seven landowners (27%) anticipated no substantial impacts
- Ten landowners (38%) anticipated major or total impacts.

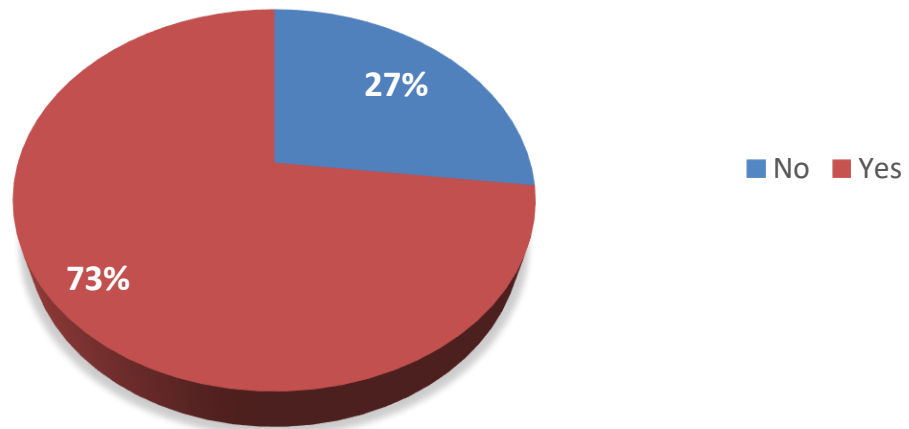


Income

Landowners were asked if they generate an income from the property.

- Nineteen (73%) landowners generate an income from their property
- Seven (27%) landowners acknowledged they do not generate an income from their property.

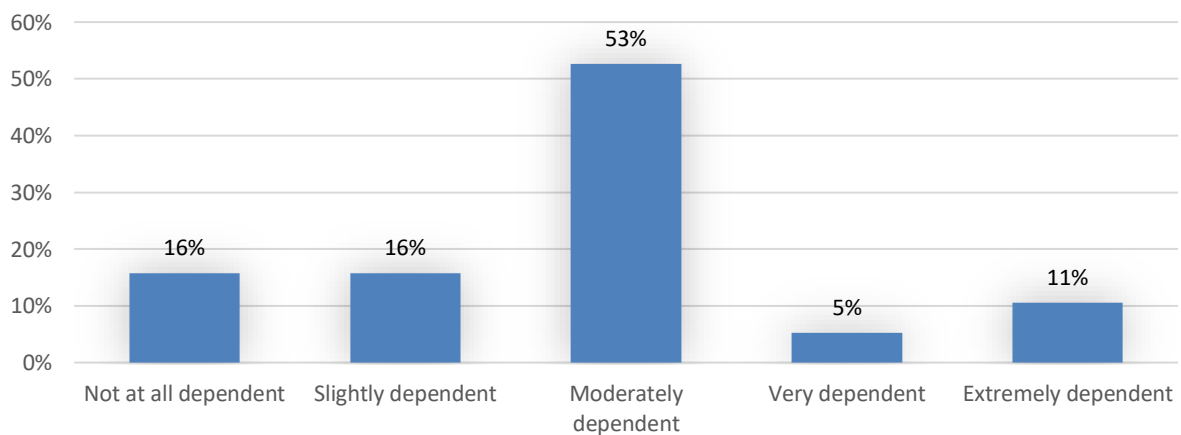
Do you generate an income from the property?



Landowners who generate income from their property were then asked to what degree they were financially dependent on that income.

- Three landowners (16%) were not dependent at all on the income
- Three landowners (16%) were slightly dependent on the income
- Ten landowners (53%) were moderately dependent on the income
- One landowner (5%) was very dependent on the income
- Two landowners (11%) were extremely dependent on the income.

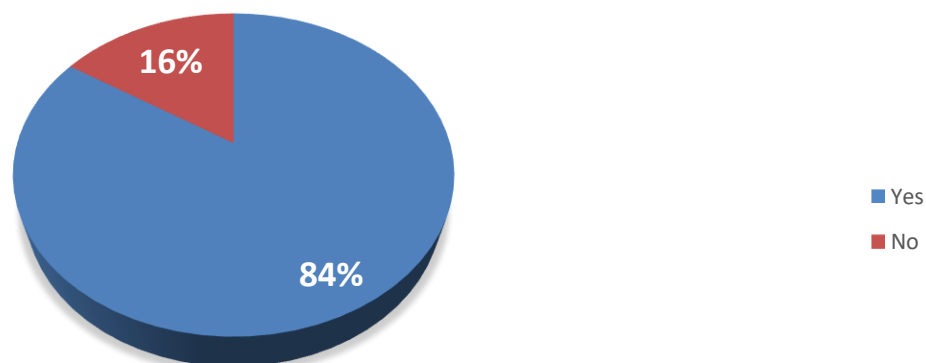
If yes, to what degree are you financially dependent on that income?



Of the 19 landowners who generated an income from their property:

- Sixteen landowner's (84%) income would be impacted by the proposed acquisition
- Three landowner's (16%) income would not be impacted by the proposed acquisition.

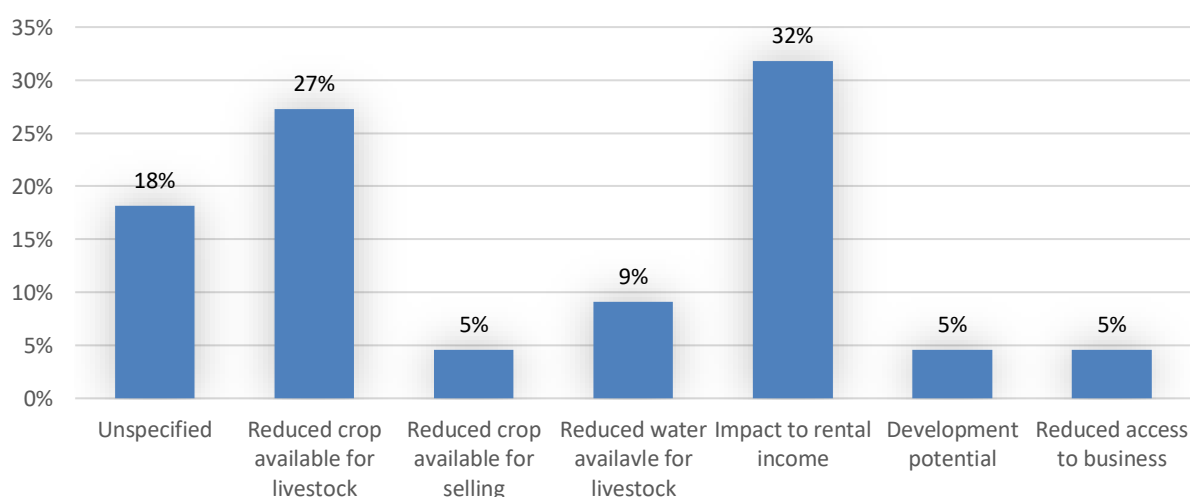
Would the proposed acquisition impact the income generated by your property?



Of the 16 landowners whose income would be impacted by the proposed acquisition:

- Four landowners (18%) did not specify how
- Six landowners (27%) would be impacted by reduced crop available for livestock
- One landowner (5%) would be impacted by reduced crop available for sale
- Two landowners (9%) would be impacted by reduced water available for livestock
- Seven landowners (32%) would be impacted by a loss of rental income
- One landowner (5%) would have reduced development potential
- One landowner (5%) would experience reduced access to business.

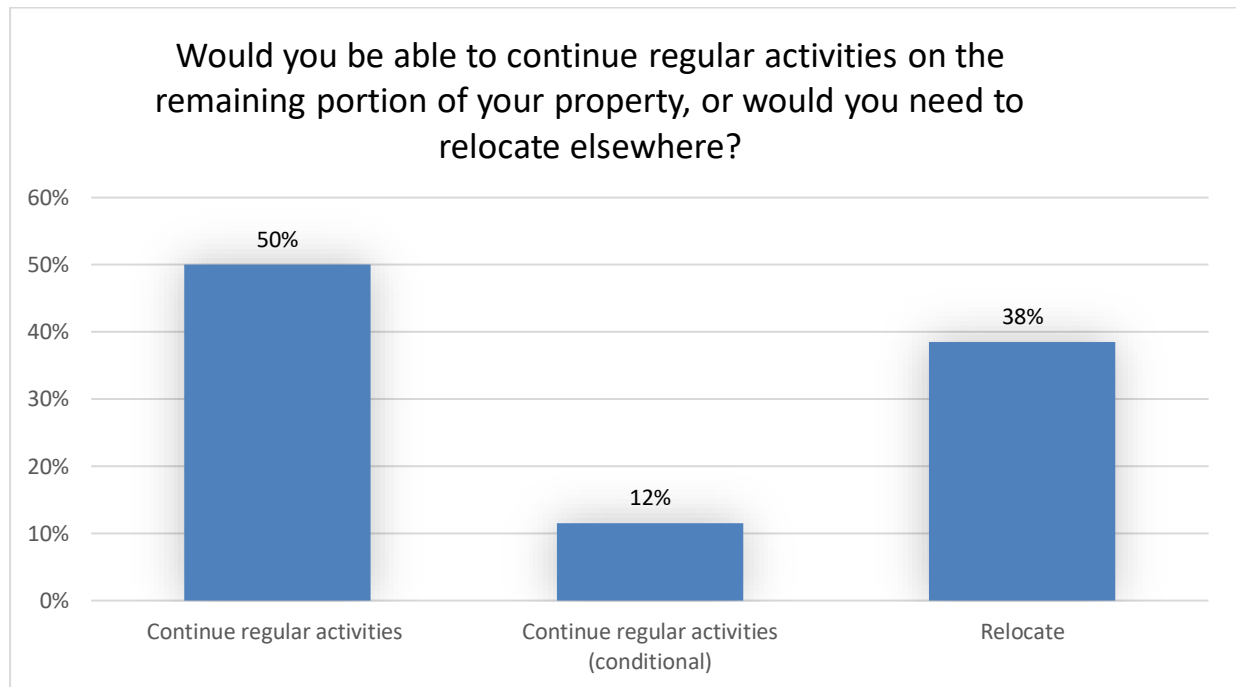
How would the proposed acquisition impact the income generated by your property?



Continued land use

Landowners were asked if they would be able to continue regular activities on the remaining portion of their property, or whether they would need to relocate.

- Thirteen landowners (50%) could continue with regular activities
- Three landowners (12%) could continue with regular activities (conditionally)
- Ten landowners (38%) would need to relocate.

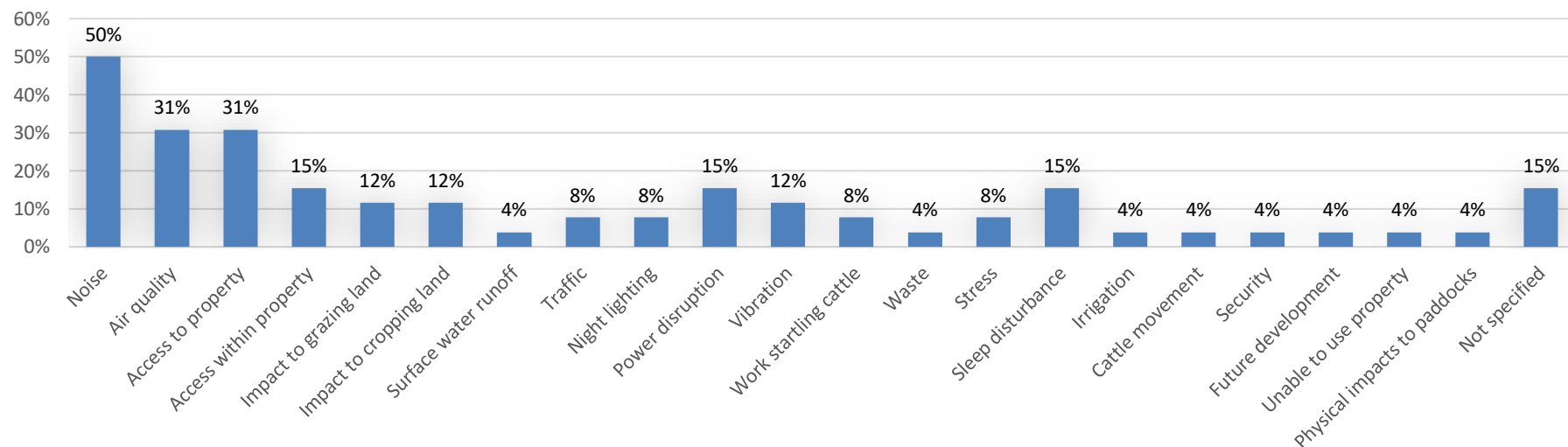


Construction impacts

Landowners were asked how they thought construction of proposal may impact them (eg noise, air quality, proximity). It should be noted that each landowner recorded a number of impacts.

- Thirteen landowners (50%) anticipated potential noise impacts
- Eight landowners (31%) anticipated potential air quality impacts
- Eight landowners (31%) anticipated potential impacts to property access
- Four landowners (15%) anticipated potential impacts to access within properties
- Three landowners (12%) anticipated potential impacts to grazing land
- Three landowners (12%) anticipated potential impacts to cropping land
- One landowner (4%) anticipated potential impacts from surface water runoff
- Two landowners (8%) anticipated potential traffic impacts
- Two landowners (8%) anticipate impacts from night lighting
- Four landowners (15%) anticipated power disruption
- Three landowners (12%) anticipated impacts from vibration
- Two landowners (8%) anticipated impacts from work startling cattle
- One landowner (4%) anticipated waste impacts
- Two landowners (8%) anticipated stress impacts
- Four landowners (15%) anticipated sleep disturbance
- One landowner (4%) anticipated impacts to irrigation
- One landowner (4%) anticipated impacts to cattle movement
- One landowner (4%) anticipated impacts to security
- One landowner (4%) anticipated impacts to future development
- One landowner (4%) would be unable to use property
- One landowner (4%) anticipated physical impacts to paddocks
- Four landowners (15%) did not specify.

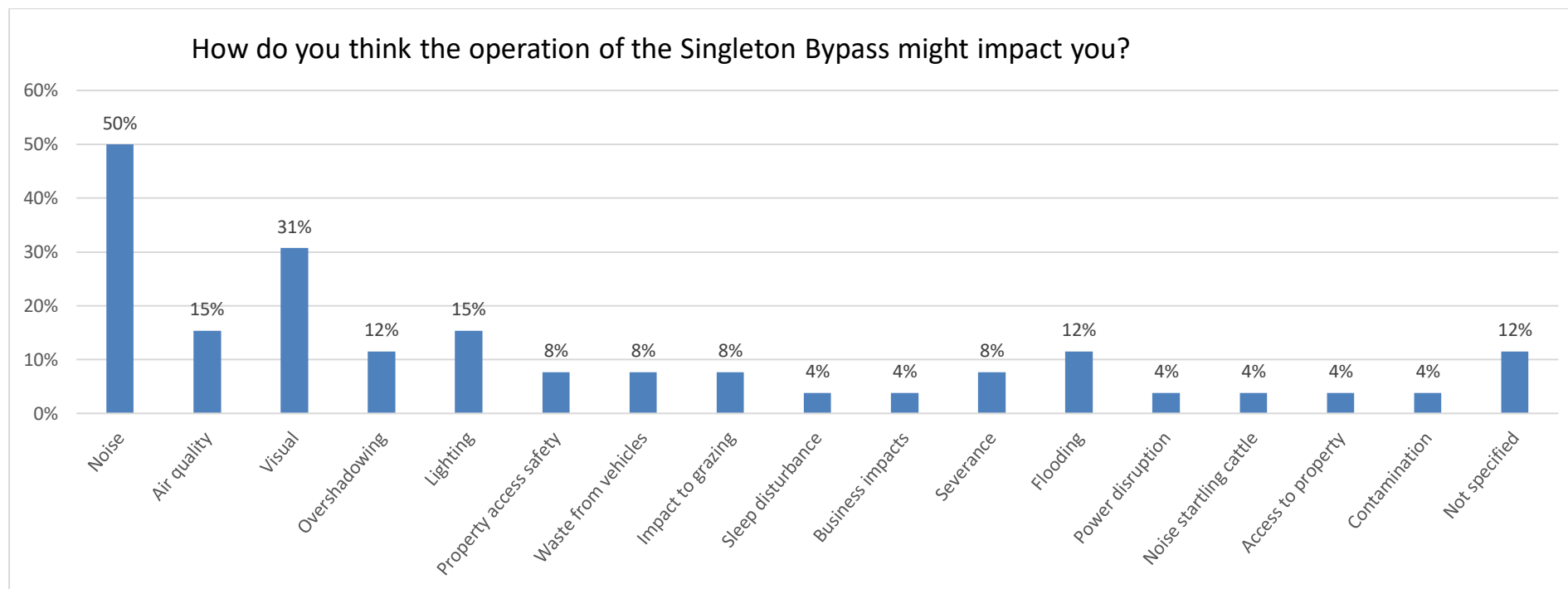
How do you think the construction of the Singleton Bypass might impact you? (eg. noise, air quality, proximity)



Operation impacts

Landowners were asked how they thought the operation of the proposal may impact them. It should be noted that each landowner recorded a number of impacts.

- Thirteen landowners (50%) anticipated noise impacts
- Four landowners (15%) anticipated air quality impacts
- Eight landowners (31%) anticipated visual impacts
- Three landowners (12%) anticipated overshadowing
- Four landowners (15%) anticipated lighting impacts (vehicles or road lighting)
- Two landowners (8%) anticipated improved safety for property access
- Two landowners (8%) anticipated waste impacts from vehicles
- Two landowners (8%) anticipated impacts to grazing land
- One landowner (4%) anticipated sleep disturbance
- One landowner (4%) anticipated impacts to business from passing trade
- Two landowners (8%) anticipated impacts from severance
- Three landowners (12%) anticipated flooding impacts
- One landowner (4%) anticipated power disruption
- One landowner (4%) anticipated noise impacts startling cattle
- One landowner (4%) impacts to property access
- One landowner (4%) contamination impacts from runoff
- Three landowners (12%) did not specify.



Mitigation

Landowners were asked what strategies they would recommend to Transport to minimise negative impacts on their properties.

- Four landowners (15%) suggested early implementation of at-property acoustic treatments
- Three landowners (12%) suggested moving the location of the bypass away from the property
- Five landowners (19%) nominated compensation
- Six landowners (23%) suggested landscaping
- Two landowners (8%) selected dust mitigation or monitoring
- Two landowners (8%) suggested communication during construction
- Three landowners (12%) requested acquisition
- One landowner (4%) suggested signage to promote access to the property
- Four landowners (15%) requested relocation assistance
- Two landowners (8%) suggested security and fencing
- One landowner (4%) suggested allowing ongoing use of bore(s)
- Three landowner (12%) suggested design change to avoid disturbance
- One landowner (4%) sought confirmation on when construction would start
- Three landowner (12%) suggested design change to provide access to the property
- One landowner (4%) proposed maintaining access during construction.

What strategies do you recommend Roads and Maritime consider to minimise negative impacts on your property?

