



Transport
Roads & Maritime
Services



Additional crossing of the Clarence River at Grafton

Preferred Option and Submissions Report

APRIL 2013





Transport
Roads & Maritime
Services

Main Road 83 Summerland Way Additional Crossing of the Clarence River at Grafton Preferred Option and Submissions Report

April 2013

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 220422

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Executive summary

Project purpose and objectives

Roads and Maritime Services (RMS) has undertaken investigations and community consultation to identify the preferred route for an additional crossing of the Clarence River at Grafton to address short-term and long-term transport needs. The key objectives for the additional crossing are to:

- Enhance road safety for all road users over the length of the project
- Improve traffic efficiency between and within Grafton and South Grafton
- Support regional and local economic development
- Involve all stakeholders and consider their interests
- Provide value for money
- Minimise impact on the environment.

Background

Following extensive investigations and consideration of issues raised by the community since the commencement of the project, RMS displayed Option C in December 2012 as the recommended preferred option for an additional crossing of the Clarence River at Grafton for public comment.

This report

The purpose of this report (*Preferred Option and Submissions Report*) is to:

- Collate and summarise the public feedback from the display of Option C as the recommended preferred option for an additional crossing of the Clarence River at Grafton
- Consider and respond to the public comments
- Identify the preferred option
- Describe any design refinements made to the recommended preferred option
- Outline the next steps.

Community feedback following the display of the *Recommended Preferred Option Report*

The *Recommended Preferred Option Report* (RMS, December 2012) was placed on exhibition from 19 December 2012 to 4 March 2013. Over this period RMS consulted widely with the community through two staffed displays, print and electronic media and through individual meetings with affected landowners and those living nearby the recommended preferred option.

A total of 67 submissions were received in response to the display.

Those opposing Option C generally supported options located away from the existing bridge. Growth of the city, flooding, the need for a bypass and removal of heavy traffic from the CBD were cited as the primary reasons for preferring an out of town option.

Strong opposition to Option C was received from many residents directly impacted.

Supporters for Option C generally stated that this option would be well used, relieve existing traffic congestion and would provide a convenient alternative for existing communities.

Key issues raised were (in no particular order):

- Adequacy of the crossing, including the configuration of two lanes on each bridge

- Concern that future transport growth and development for the region had not been considered as part of the route selection process
- The use of traffic signals and roundabouts, especially for heavy vehicles negotiating these, causing further congestion at roundabouts and braking at lights
- Concerns about heavy vehicles travelling through Grafton, including safety and noise related issues
- Concern over loss of parking spaces with impacts on local businesses
- Potential impacts on heritage buildings
- Flooding in Pound Street and the changing nature of the flooding
- Indirect and direct property impacts
- Timing of the construction of the new bridge and changes to the state and local road network
- Connectivity and integration of the new bridge with Clarence Valley Council's cycleway plans
- Concern about the consultation process, including timing, extent and matters considered as part of the investigations and review.

In total 16 submissions supported Option C, 29 opposed Option C and the balance were neutral or provided specific comments on elements of the recommended preferred option.

Preferred option

RMS has carefully considered the community feedback received on the recommended preferred option (Option C) and recommended to the Minister that Option C be confirmed as the preferred option for an additional crossing of the Clarence River at Grafton. The key reasons for the recommendation are:

- On balance it best meets the project objectives of the six short listed options;
- It best meets the short and long term traffic network needs for the Grafton region
- The public feedback has not raised any new significant issues which would alter the recommendation.

The Minister has endorsed that Option C be confirmed as the preferred option for an additional crossing of the Clarence River at Grafton.

The preferred option is located just downstream of the existing Grafton Bridge and is shown in Figure 1.

Refinements to the recommended preferred option

Refinements have been made to the recommended preferred option following RMS review of the preliminary design, stakeholder consultation and feedback received during the public display of the *Recommended Preferred Option Report* (RMS, December 2012). These include refinements to the preliminary design to improve parking for local businesses and adjustments to the indicative road boundary for future bridge maintenance purposes.

Preferred option display

This report is available on the project website www.rms.nsw.gov.au/grafonbridge. Copies are also available by contacting the project team on 1800 633 332 or via the RMS Grafton office at Prince Street.

Static displays are on display at key locations, as advertised on the project website.

Next steps

An environmental assessment of the concept design for the preferred option will now be prepared and displayed for community and stakeholder comment.

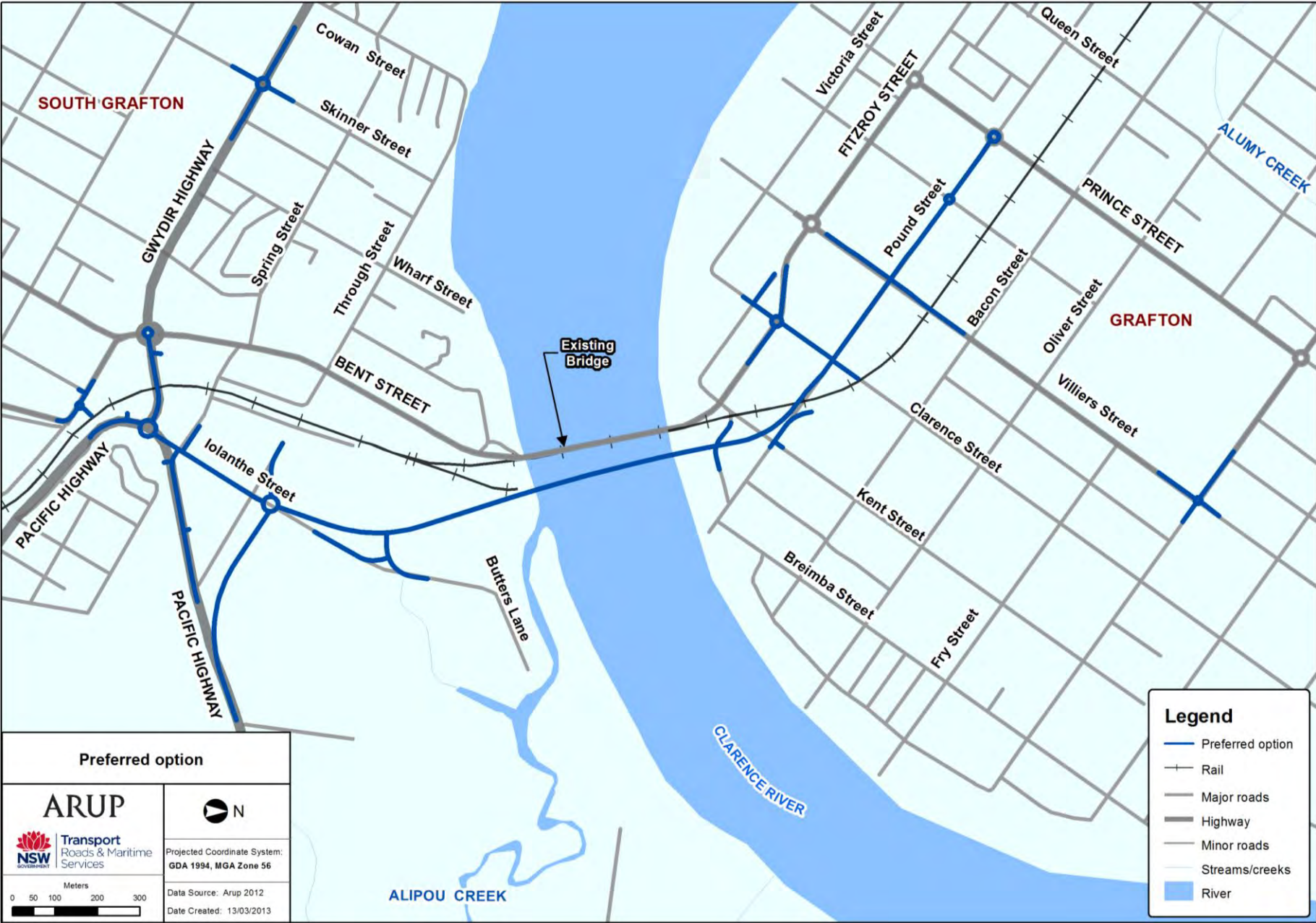


Figure 1: Preferred option for an additional crossing of the Clarence River at Grafton

Glossary of terms and abbreviations

AHD	Australian Height Datum, a common national plane of level approximately equivalent to the height above sea level.
AM peak	Morning traffic peak period in Grafton. The three hour period between 7-10am was modelled and this showed that the most critical hour is 8-9am.
ARI	Average recurrence interval (measured in years) is a term used to describe flood frequency. It is the long-term average number of years between floods of a certain magnitude. For example, a 100-year ARI flood is a flood that occurs or is exceeded on average once every 100 years.
Austrroads	Austrroads is the association of Australian and New Zealand road transport and traffic authorities.
ARTC	Australian Rail Track Corporation.
CBD	Central business district.
Key stakeholder	The key stakeholders are groups who are proactively engaged during the project.
Level of service	A measure of the quality of road operating conditions, including speed, travel time, freedom to manoeuvre, traffic interruptions, and comfort and convenience.
MHWS	Mean High Water Springs is the highest level to which spring tides reach on average over a period of time. This level is generally close to being the "high water mark" where debris accumulates on the shore annually.
Traffic model	Microsimulation computer software package that has the ability to individually model each vehicle, including heavy vehicles within a road network. It enables a realistic representation of driver behaviour such as overtaking and lane changing and can also illustrate network performance. It is a particularly useful tool in modelling congested road networks and for predicting the likely impact of changes in traffic patterns resulting from changes to traffic flow (demand) and/or changes to the physical environment (road network).
NSW	New South Wales.
PM Peak	Afternoon traffic peak period in Grafton. The three hour period between 4-7pm was modelled and this showed that the most critical hour is 4-5pm.
Preferred option	The recommended preferred option, Option C, that is confirmed as the preferred option for an additional crossing of the Clarence River at Grafton.
Project	Additional crossing of the Clarence River at Grafton.
Project team	The team, comprising representatives of RMS, Arup (as the lead technical consultant) and other technical specialists, that is working on the project.
Recommended preferred option	The RMS recommended preferred option for an additional crossing of the Clarence River at Grafton, which was placed on display for public comment from 19 December 2012 to 4 March 2013
Reduced level	The vertical distance between a survey point and the Australian Height Datum (AHD).
RMS	Roads and Maritime Services (formerly known as the RTA: Roads and Traffic Authority).
SES	State Emergency Service
TfNSW	Transport for New South Wales.
UNSW	University of New South Wales

Contents

	Page
Executive summary	i
Glossary of terms and abbreviations	v
1 Introduction	1
1.1 Project purpose and objectives	1
1.2 Purpose of this report	1
1.3 Background	1
1.4 Related projects	2
1.5 The recommended preferred option	2
2 Display of the Recommended Preferred Option Report	3
2.1 Recommended Preferred Option Report	3
2.2 Public exhibition	3
2.3 Consultation with potentially impacted property owners/residents	4
2.4 Other consultation	4
3 Summary of issues raised in submissions	6
3.1 Summary of issues raised	6
3.2 Categorisation of the submissions	6
4 Issues raised and responses to community feedback	8
4.1 Traffic Impacts	8
4.2 Heavy vehicles	11
4.3 Public transport	13
4.4 Pedestrian and cycleway connectivity	14
4.5 Safety	14
4.6 Other options and alternative arrangements	16
4.7 Maintenance	17
4.8 Noise and Vibration	18
4.9 Heritage impacts	19
4.10 Flooding	19
4.11 Social impacts	22
4.12 Amenity: streetscape and views	23
4.13 Construction impacts	23
4.14 Property and business impacts	24
4.15 Cost and cost benefit analysis	25
4.16 Timing	26
4.17 Consultation process	26
4.18 Support for recommended preferred option	28

4.19	Suggested improvements to the recommended preferred option	28
5	Identification of the preferred option	31
6	Design refinements	33
7	Next steps	35

Tables

Table 1: Stakeholder consultation since the release of the *Recommended Preferred Option Report* (RMS, December 2012)

Figures

Figure 1: Preferred option for an additional crossing of the Clarence River at Grafton

Figure 2: Graphical representation of through trips

Figure 3: Process to identify a preferred option

Appendices

Appendix 1 – Summary of community consultation activities for the recommended preferred option

1 Introduction

1.1 Project purpose and objectives

Roads and Maritime Services (RMS) has undertaken investigations and community consultation to identify the preferred route for an additional crossing of the Clarence River at Grafton to address short-term and long-term transport needs. The key objectives for the additional crossing are to:

- Enhance road safety for all road users over the length of the project
- Improve traffic efficiency between and within Grafton and South Grafton
- Support regional and local economic development
- Involve all stakeholders and consider their interests
- Provide value for money
- Minimise impact on the environment.

1.2 Purpose of this report

The purpose of this report (*Preferred Option and Submissions Report*) is to:

- Collate and summarise the public feedback from the display of Option C as the recommended preferred option for an additional crossing of the Clarence River at Grafton
- Consider and respond to the public comments
- Identify the preferred option
- Describe any design refinements made to the recommended referred option
- Outline the next steps.

1.3 Background

Planning for an additional crossing of the Clarence River at Grafton was initially funded by the NSW Government, starting from 2002. Investigations were deferred in September 2005 and restarted in 2009.

In December 2010 RMS (formerly the Roads and Traffic Authority (RTA)) announced a revised approach to engage more effectively with the community and stakeholders in identifying a preferred route for an additional crossing. A community update issued in December 2010 identified 13 preliminary route options and invited community comment via a postal survey. Subsequent phone and business surveys were also carried out.

In June 2011 RMS published the *Feasibility Assessment Report* which described the assessment undertaken on the 41 suggestions identified following the December 2010 to March 2011 community consultation period. Twenty-five preliminary route options in five corridors were identified for engineering and environmental investigation.

In January 2012 six route options were announced for further investigation. The short-listed options and short-listing process are documented in the *Preliminary Route Options Report – Final* (RMS, January 2012).

Design refinements and further field and technical investigations were undertaken on the six route options. These were documented in the *Route Options Development Report* (RMS, September 2012).

The six route options were subject to an assessment process in October and November 2012 to identify a recommended preferred location for an additional crossing of the Clarence River at Grafton. The assessment process was based on community feedback, technical investigations undertaken to date, the outcomes of a value management workshop and RMS review of the options. The process initially identified Option E and Option C for moving forward for further consideration. Further comparative assessment resulted in Option C being preferred over Option E as the recommended preferred option.

The assessment process and the resulting recommended preferred option are documented in the *Recommended Preferred Option Report* (RMS, December 2012).

1.4 Related projects

It is important to consider this project within the context of the Pacific Highway upgrade program. Planning for the upgrade of the Pacific Highway between Glenugie and Tyndale is well advanced. When completed, the upgraded Pacific Highway will be realigned approximately 20 kilometres east of Grafton, bypassing South Grafton.

The Pacific Highway upgrade will significantly reduce the volume of traffic passing through South Grafton and will improve the flood immunity for the Pacific Highway to the north of Grafton, reducing the reliance on the Summerland Way as the flood free access road between the Queensland border and Grafton. It will also reduce the number of freight vehicles using the Summerland Way, with an upgraded Pacific Highway offering a better alternative for freight operators.

1.5 The recommended preferred option

The *Recommended Preferred Option Report* (RMS, December 2012) documents the process followed for the assessment of the six short-listed route options and the identification of a recommended preferred option. It also provides information on community involvement and feedback received following the display of the *Route Options Development Report* (RMS, September 2012).

The *Recommended Preferred Option Report* (RMS, December 2012) was placed on exhibition from 19 December 2012 to 4 March 2013. A number of supporting consultation activities were undertaken to ensure that information was received by the wider community and opportunities were available for comment and questions. The exhibition period, during which comments on the report were invited, was initially due to finish on 18 February 2013, but was extended until 4 March 2013 to allow members of the community impacted by floods in Grafton additional time to comment.

2 Display of the Recommended Preferred Option Report

2.1 Recommended Preferred Option Report

The *Recommended Preferred Option Report* (RMS, December 2012) outlines the process undertaken to select the recommended preferred option, including the report on the value management workshop and community feedback received during the display of the *Route Options Development Report* (RMS, September 2012) in September and October 2012.

The report also includes a description of the recommended preferred option and the potential impacts including:

- Social, economic, property and land use
- Urban design, visual impact and landscape character
- Noise and vibration
- Flooding and hydrology
- Non-Aboriginal heritage
- Aboriginal heritage
- Ecology
- Traffic management, access and safety
- Planning
- Other impacts.

2.2 Public exhibition

The *Recommended Preferred Option Report* (RMS, December 2012) was placed on public exhibition from 19 December 2012. Key components of the display were a community update, the project website and staffed displays, with advertising placed in local newspapers.

The community update was widely distributed. Copies of the report and community update were made available for collection at the following locations:

- RMS Pacific Highway office: 21 Prince Street Grafton
- Grafton Shoppingworld staffed displays.

The project website provided up to date information as well as all background information and documents. It included simulations of the traffic modelling for each of the six short-listed route options, including the recommended preferred option, and interactive maps showing issues and potential constraints associated with planning an additional crossing of the Clarence River.

The 1800 number and project email allowed members of the community and other stakeholders to contact the project team with any comments or questions they had regarding the recommended preferred option.

Potentially directly affected property owners were contacted and offered one-on-one meetings to discuss property impacts.

Submissions on the recommended preferred option could be provided:

- At staffed displays, recorded by the project team
- By mail or hand delivery
- By email
- By telephone to the project team on the 1800 number.

Submissions were received via all of these methods.

Two staffed displays were initially scheduled for 31 January 2013 and 7 February 2013 during the exhibition period. Submissions on the recommended preferred option were initially invited from the community and other stakeholders by 18 February 2013.

Following prolonged wet weather and flooding impacts on the Grafton community during January 2013, the staffed displays were rescheduled to 14 February and 21 February 2013. The submissions period was also extended until 4 March 2013 to allow for the rescheduled staffed displays, however, submissions received up until 8 March 2013 were included. The rescheduling of the staffed displays and the extension of the submission period were announced on 30 January 2013 and advertised widely, including on the RMS project website. A full list of consultation activities, dates, times and methods is outlined in Appendix 1.

2.3 Consultation with potentially impacted property owners/residents

In conjunction with display of the *Recommended Preferred Option Report* (RMS, December 2012), RMS contacted property owners potentially directly affected by the recommended preferred option. Letters were sent on 19 December 2012 to property owners advising them of the recommended preferred option. Potentially directly affected property owners could contact the project team using the contact details provided in the letter to arrange a meeting or obtain further information. A number of landowners requested meetings by phoning the 1800 number, emailing the project email address, attending the staffed displays or writing to the project team.

The project team has been meeting with property owners who are either potentially directly affected by the recommended preferred option, or have concerns in relation to impacts from construction and operation of the bridge due to its proximity to their homes. Meetings have also taken place with business owners along Pound Street to discuss vehicular access and on-street parking matters, which will continue to be investigated at the concept design phase.

Some property owners requested further information and copies of sketches showing more specific information on the nature of the potential impact on their property.

2.4 Other consultation

Consultation with key stakeholders was carried out by RMS prior to, during and after the exhibition period. Consultation included meetings on request by stakeholders including Grafton Chamber of Commerce and Industry, the Grafton-Ngerrie Local Aboriginal Land Council and Busways after the announcement of the recommended preferred option. A summary of the topics discussed with stakeholders is presented in Table 1.

Table 1: Stakeholder consultation since the release of the *Recommended Preferred Option Report* (RMS, December 2012)

Stakeholder	Consultation date	Topics discussed
Grafton Chamber of Commerce and Industry	February 2013	<ul style="list-style-type: none"> • Presentation of Option C as the recommended preferred option • Reasons supporting decision • Process from here.
Grafton-Ngerrie Local Aboriginal Land Council	January 2013	<ul style="list-style-type: none"> • Discussion of Option C in regards to the proximity to the Golden Eel site at the mouth of the Alipou Creek • Requested submission / input from Grafton-Ngerrie Local Aboriginal Land Council on potential mitigation measures they would like to see implemented during construction.
Busways	March 2013	<ul style="list-style-type: none"> • Network efficiencies resulting from Option C, including reducing congestion on existing bridge • Potential intersection upgrades to enable better bus route efficiencies • Potential opportunities for future service routes as a result of Option C.

3 Summary of issues raised in submissions

3.1 Summary of issues raised

The *Recommended Preferred Option Report* (RMS, December 2012) was placed on exhibition from 19 December 2012 to 4 March 2013. Over this period RMS consulted widely with the community through two staffed displays, print and electronic media and through individual meetings with affected landowners and those living nearby the recommended preferred option.

A total of 67 submissions were received in response to the display.

Those opposing Option C generally supported options located away from the existing bridge. Growth of the city, flooding, the need for a bypass and removal of heavy traffic from the CBD were cited as the primary reasons for preferring an out of town option.

Strong opposition to Option C was received from many residents directly impacted.

Supporters for Option C generally stated that this option would be well used, relieve existing traffic congestion and would provide a convenient alternative for existing communities.

Key issues raised were (in no particular order):

- Adequacy of the crossing, including the configuration of two lanes on each bridge
- Concern that future transport growth and development for the region had not been considered as part of the route selection process
- The use of traffic signals and roundabouts, especially for heavy vehicles negotiating these, causing further congestion at roundabouts and braking at lights
- Concerns about heavy vehicles travelling through Grafton, including safety and noise related issues
- Concern over loss of parking spaces with impacts on local businesses
- Potential impacts on heritage buildings
- Flooding in Pound Street and the changing nature of the flooding
- Indirect and direct property impacts
- Timing of the construction of the new bridge and changes to the state and local road network
- Connectivity and integration of the new bridge with Clarence Valley Council's cycleway plans
- Concern about the consultation process, including timing, extent and matters considered as part of the investigations and review.

In total 16 submissions supported Option C, 29 opposed Option C and the balance were neutral or provided specific comments on elements of the recommended preferred option.

3.2 Categorisation of the submissions

Issues have been grouped thematically under the following categories:

- Traffic impacts
- Heavy vehicles
- Public transport
- Pedestrian and cycleway connectivity

- Safety
- Other options and alternative arrangements
- Maintenance
- Noise and vibration
- Heritage impacts
- Flooding
- Social impacts
- Amenity: streetscape and views
- Construction impacts
- Property and business impacts
- Cost and cost benefit analysis
- Timing
- Consultation process
- Support for recommended preferred option
- Suggested improvements to the recommended preferred option.

4 Issues raised and responses to community feedback

Issues raised by the community and stakeholders are summarised in the tables below. The submissions received have been numbered to enable submission writers to remain anonymous, however the number does not reflect an order of priority. Many submission writers raised similar issues, with the summary table below indicating which submission raised the issue and referencing the response. Submissions were categorised into the themes outlined in Chapter 3.2.

Investigations helped to inform the responses to submissions. These investigations are documented in the *Route Options Development Report* (RMS, September 2012) and the *Recommended Preferred Option Report* (RMS, December 2012).

4.1 Traffic Impacts

4.1.1 Traffic impacts – submissions

Issue raised in submission	Submission number	Response
Concern about traffic congestion due to introduction of new traffic signals	1, 6, 8, 24, 56	4.1.2.1
Splitting traffic between the two bridges so that each bridge is one-way only	2, 16, 25	4.1.2.5
New bridge should be 4 lanes to avoid problems with breakdowns, with old bridge kept for pedestrians and cyclists or recreational use only	2	4.1.2.2
Concerns about new bridge feeding traffic into Pound St	6, 25	4.1.2.3
Traffic volumes exceeded capacity of current bridge 30 years ago, with Option C resulting in similar capacity issues in the future	6	4.1.2.4
New bridge should be next to existing bridge, each with one-way traffic so that tidal flow can be implemented in the future	16	4.1.2.5
Cars not able to travel along Kent St and Pound St from the river end through to the central business area because these streets will be blocked	49	4.1.2.3
Turf St T-intersection with Dobie St has a capacity problem now especially at race time and will be worse in the future	56	4.1.2.6
Concerns traffic is funnelled into an already congested part of town	1, 4, 12, 30, 34, 56, 57, 59	4.1.2.3, 4.1.2.7
No faith in traffic modelling figures based on other modelling done for tunnels	56, 57	4.1.2.8
All other projects seem to divert traffic from town rather than put it through town – why not Grafton	1, 19, 60	4.1.2.7
Inflated figures of traffic used to justify project	47	4.1.2.8
Question the local traffic figure of 98% being incorrect	60	4.1.2.9
Turning lanes required to provide access to businesses on Iolanthe St	56	4.1.2.10

4.1.2 Traffic impacts - RMS response

4.1.2.1 Introduction of signalised intersections

Traffic signals are normally considered for intersections with high volumes of traffic or where there is a significant imbalance of movement from one or more of the roads leading to the intersection. In these circumstances, traffic signals generally perform better than roundabouts and facilitate safe

opportunities for pedestrians, with a clearer distinction of the safe crossing areas, and can reduce conflict for cyclists utilising the road network.

Signalised intersections may not be required initially should the project be constructed in stages. Information on project staging will be included in the concept design and environmental assessment.

4.1.2.2 New bridge to be two lanes in each direction

The new bridge would have wide lanes with no “kinks” and, as a result, would more than double the capacity of the existing crossing. Traffic modelling undertaken for the project shows that one additional lane in each direction would cater for predicted traffic volumes through to 2049. The modelling also shows that with the new bridge in place, the existing bridge would flow freely in the morning and afternoon peaks in 2019, and by 2049 traffic volumes would still be lower than they are today. Local intersection improvements would also be made to the existing local road network, which would alleviate most of the congestion associated with merging traffic.

The preference to close the existing bridge to vehicular traffic and provide a new bridge which has four lanes (two in each direction) instead of the current proposal of retaining vehicular traffic on the existing bridge and providing a new bridge which requires only two lanes (one in each direction) would significantly add to the cost of the project and could affect its financial viability. Given the existing bridge is structurally sound and functions as a road and rail bridge, it is not considered a cost effective solution to close an existing functioning asset. Therefore the suggestion is not supported by RMS.

4.1.2.3 Pound Street traffic and connectivity

The recommended preferred option would be located approximately 70 metres east (downstream) of the existing bridge. It would connect the Pacific Highway at Iolanthe Street in South Grafton to Pound Street in Grafton. It is acknowledged that as a result of the additional crossing, there would be an increase of traffic on the section of Pound Street leading up to the new bridge. Adjustments to some local roads are proposed as part of the overall project to ensure that the section of Pound Street (adjacent to existing business, the TAFE and Shoppingworld) would function efficiently and safely for all road users, including pedestrians and cyclists.

The eastern end of Pound Street and the southern end of Kent Street would not connect through to the Grafton CBD under the preliminary design for the recommended preferred option. Connections for local residents would still exist however via Bacon Street or via Greaves Street under the Kent Street viaduct and down Fitzroy Street. Thus connectivity to the CBD of Grafton would still be available.

4.1.2.4 Traffic volumes on new bridge and approaches will soon exceed capacity

Traffic modelling shows that the recommended preferred option would provide sufficient capacity for 30 years after opening, a typical time frame adopted by RMS in planning new road infrastructure.

4.1.2.5 Tidal flows to manage traffic

Tidal flow refers to adjusting the lane configuration to meet traffic demand, particularly in the morning and afternoon peaks. The existing bridge is narrow and combined with “the kinks” means that it could not operate safely or efficiently with two lanes of traffic in the same direction.

4.1.2.6 Turf Street T-intersection

Intersection upgrades have been designed with consideration of both network efficiency and safety. The safety of intersections impacted by the project will be further investigated as part of the concept design.

RMS will also consult with Clarence Valley Council to confirm the location of the State Road network through Grafton with the new bridge in place and any special event traffic management arrangements.

4.1.2.7 Bypass / traffic through town

Analysis of traffic using the existing bridge shows that 97 per cent of the traffic has an origin (start) or destination (finish) point in Grafton or South Grafton, meaning that the majority of the traffic on the bridge is local traffic. The analysis has identified that the primary origin or destination of this traffic is either the Grafton or South Grafton urban areas. Consequently, an option which bypasses Grafton would provide limited benefits for the majority of trips across the existing bridge, as the majority of traffic would remain on the existing bridge given the proximity to the Grafton and South Grafton CBDs.

Traffic modelling for the year 2049 indicates only one third of the vehicles in 2049 would use Options 14 or 15, resulting in significant congestion on the existing bridge and approach roads. This would not meet the project objective of improving traffic efficiency between and within Grafton and South Grafton.

After consideration of all the in-town options, the recommended preferred option provides the best connection to the growth area of Clarenza, and a better network connection to the Pacific Highway for traffic travelling either north or south.

RMS will consult with Clarence Valley Council during the concept design and the environmental assessment phase to manage the safety and amenity issues related to traffic in close proximity to the CBD.

4.1.2.8 Traffic figures

An independent peer review of the traffic and transport assessments and best practice community consultation was undertaken in 2012 by the Institute of Environmental Studies, Faculty of Science at the University of New South Wales. The review is documented in the *Additional crossing of the Clarence River, Grafton - Route Options Development Report: peer review of traffic and the strategic models, and best practice community consultation* (UNSW, March 2013). The verification process, which included an independent review of the public traffic assessment reports, found that the traffic assessment was more than adequate to inform the selection of the recommended preferred option.

4.1.2.9 Local traffic component

Through trips, shown in Figure 2 below, were taken from a survey of all vehicles between 5am and 7pm on 19 August 2010 for cross river traffic. They represent trips which have an origin and a destination outside the Grafton and South Grafton areas which are shaded in red. The number of through trips represents three per cent of the total cross-river traffic during the survey period.

A similar survey carried out in 2009 found that two per cent of the trips across the existing bridge were through trips. Details of both surveys are included in the *Additional Crossing of the Clarence River - Heavy Vehicle Study* (RMS, March 2011) on the project website.



Figure 2: Graphical representation of through trips

An independent review was also undertaken regarding the traffic analysis, which is referred to in Chapter 4.1.2.8.

4.1.2.10 Access to businesses on Iolanthe Street

The two proposed roundabouts included in the preliminary design on Iolanthe Street provide U-turn facilities and would reduce the need for right turns to and from Iolanthe Street to access the adjacent businesses. An additional access into the Bunnings Warehouse car park off the old section of the Pacific Highway has also been included in the preliminary design.

The potential need for turning lanes on Iolanthe Street is noted and will be further considered at the concept design phase.

4.2 Heavy vehicles

4.2.1 Heavy vehicles - submissions

Issue raised in submission	Submission number	Response
A second crossing is primarily a key link between Summerland Way and Pacific Hwy, local traffic between Grafton and South Grafton is secondary	1	4.2.2.1, 4.2.2.2
Trucks will not use Summerland Way if they have to go through CBD, heavy vehicles through Grafton CBD will be a problem	6	4.2.2.1, 4.2.2.2
Heavy vehicle traffic will be directed into town	4, 12, 15, 35, 49, 59, 65	4.2.2.1, 4.2.2.2
Grafton needs a bypass and not more heavy vehicles through town	26, 32, 35, 56, 66	4.2.2.1, 4.2.2.2
Believes option should encourage traffic not destined for the CBD to bypass CBD, also states that a downstream option is more compatible with the future growth areas of Junction Hill and Clarenza	49, 57	4.2.2.2
Concerns about heavy vehicles using Pound St – Mary St – Bacon St –Turf St route as the shortest through route through Grafton town	7	4.2.2.3
Grafton will have to endure 24/7 heavy vehicles through residential streets and CBD	1	4.2.2.2. 4.2.2.3

Issue raised in submission	Submission number	Response
Concern that the Stage 1 roundabout planned for Pacific Hwy, Iolanthe St and Spring St for northbound heavy vehicles is not large enough, it will cause substantial delays for traffic on Iolanthe St	52	4.2.2.4
Two roundabouts on Iolanthe St will impede heavy vehicle movements and increase congestion	56	4.2.2.4
Villiers St and Dobie St roundabout will be problematic for heavy vehicles	56	4.2.2.4
Summerland Way is an alternative route for crashes or closures on a number of roads, not just the Pacific Hwy. Choosing Option C means that Grafton will continue to suffer the safety and noise impacts of heavy vehicles through town during these diversions.	34, 35	4.2.2.2
Encouraging heavy vehicles to use the new bridge cannot be policed	25	4.2.2.5

4.2.2 Heavy vehicles– RMS response

4.2.2.1 Freight route

It is not the intention of the new crossing to provide an additional freight corridor through Grafton and South Grafton, or to change the role and function of local roads to carry heavy vehicles. The project is not seeking to attract more heavy vehicles onto the Summerland Way.

The Pacific Highway is an important component of the National Highway network and is recognised as the main freight corridor linking Brisbane and Sydney along the east coast, with access to the inland towns of Lismore and Casino via east-west connections.

Both the State and Federal governments have identified a high priority for the upgrading of the Pacific Highway to dual carriageway. It is anticipated that the majority of freight traffic between Brisbane to Sydney would continue to use the Pacific Highway.

4.2.2.2 Heavy vehicle bypass / heavy vehicles through town

Traffic analysis undertaken on the existing bridge found that five per cent of traffic is classified as heavy vehicles, which also includes rigid vehicles (including buses) and articulated vehicles (semi-trailers and B-doubles). Furthermore, the analysis undertaken on truck usage showed that 88 per cent of trucks using the existing bridge have an origin or destination in Grafton or South Grafton. Consequently, an option which bypasses Grafton would provide limited benefits for the majority of heavy vehicle trips across the existing bridge.

RMS will consult with Clarence Valley Council during the concept design and environmental assessment phase to manage the safety and amenity issues related to heavy vehicle traffic in close proximity to the CBD, including hazardous goods, noise, vibration and pollution.

The Pacific Highway upgrade will improve the flood immunity of the highway and the addition of the second carriageway will make the Pacific Highway much less vulnerable to closure as a result of a crash. As a result, the reliance on the Summerland Way as an emergency route between the Queensland border and Grafton will be significantly reduced.

4.2.2.3 Heavy vehicles using shortest route through town

The existing 25/26 metre long B-double route in Grafton is shown in the September 2012 Community Update as Turf Street - Dobie Street - Villiers Street.

Bacon Street does not form part of the designated 25/26 metre long B-double route. However Turf Street - Bacon Street - Mary Street is signposted as an alternative high vehicle route.

RMS will also consult with Clarence Valley Council to confirm the location of the State Road network through Grafton with the new bridge in place. Management of the local road network will continue to be the responsibility of Clarence Valley Council.

4.2.2.4 Roundabouts and heavy vehicles

The roundabouts proposed in the preliminary concept designs for the recommended preferred option, including those on Iolanthe Street, Villiers / Dobie streets and the Pacific Highway, will be designed for use by heavy vehicles. Traffic analysis undertaken on the recommended preferred option has identified that the roundabouts proposed in the preliminary design would have sufficient capacity through to 30 years after opening.

The need for a roundabout at the intersection of Iolanthe and Spring Streets will be further investigated at the concept design phase. It has been assumed that the Pacific Highway upgrade from Glenugie to Tyndale will be in place when works for the additional crossing are complete, resulting in substantially less traffic on that section of the Pacific Highway.

4.2.2.5 Enforcement of heavy vehicle bans on the existing bridge

B-doubles and semi-trailers currently using the existing bridge would be required to move to the new bridge crossing. Buses and smaller heavy vehicles would still be able to use the existing bridge. The restrictions would be sign posted and enforced by RMS and the police. Truck usage of the existing bridge would be monitored and enforcement measures reviewed as required.

4.3 Public transport

4.3.1 Public transport - submissions

Issue raised in submission	Submission number	Response
Selection of Option C as the recommended preferred option has seriously compromised the extent to which the bus route system can benefit from the additional crossing	23	4.3.2.1
Consideration to be given to banning all trucks from the existing bridge to assist in the flow of buses	23	4.3.2.1
Consideration to be given to converting the terminating kerbside lane (north of Through St) to either a bus lane or a T2 in morning peak	23	4.3.2.1
The Gwydir Hwy / Bligh St intersection should be upgraded to a roundabout to reduce delays to bus routes crossing the Gwydir Hwy on Bligh St	23	4.3.2.2

4.3.2 Public transport – RMS response

4.3.2.1 Integration of the bus network

Traffic modelling undertaken to date indicates that a new bridge combined with bans on B-doubles and semi-trailers would be sufficient to free up movement on the existing bridge for all vehicles including buses. The recommended preferred option allows existing bus routes to be retained but removes a significant proportion of cross-river traffic from the existing bridge and approaches. Traffic modelling shows that with the recommended preferred option in place, only about 33 per cent of cross river traffic would use the existing bridge. Due to the reduction in traffic volumes,

traffic on the existing bridge and approaches would flow freely in the AM and PM peaks in 2019, and by 2049 traffic volumes would still be lower than they are today. Bus routes would benefit from less congestion, resulting in better travel times and reliability.

The recommended preferred option also provides additional route options for buses servicing Grafton and South Grafton.

During the concept design and environmental assessment phase, RMS will continue to consult with various stakeholders across the community, including Clarence Valley Council, public transport and school bus operators, to ensure the preferred option takes into account all transport modes, including public transport.

4.3.2.2 Bligh Street intersection

The need for a roundabout at this intersection and the impact that it would have on the overall traffic network will be further assessed in consultation with Clarence Valley Council and local bus companies during the concept design and environmental assessment phase.

4.4 Pedestrian and cycleway connectivity

4.4.1 Pedestrian and cycleway connectivity - submissions

Issue raised in submission	Submission number	Response
On southern bank of the river there should be a pedestrian/cycle path and the bridge should cater for connections to any new paths	40, 51, 61	4.4.2.1
Believes there are inconsistencies between Councils cycle planning for Clarence and RMS planning, needs to be better integrated and suggested signals rather than roundabout as safer for pedestrians and cyclists.	40, 52	4.4.2.1

4.4.2 Pedestrian and cycleway connectivity – RMS response

4.4.2.1 Pedestrian and cycleway connectivity

RMS has consulted with Clarence Valley Council regarding integration of the cycleway facilities for the additional crossing with Clarence Valley Council's existing and proposed future facilities. RMS will continue to consult with Clarence Valley Council during the concept design and environmental assessment phase on ways to further explore opportunities to integrate Clarence Valley Council's cycleway plan with the new bridge. A shared path for pedestrians and cyclists on the new bridge and alongside the bridge approach roads has been included in the preliminary design. Provision for a pedestrian/cycle path on the southern bank of the river connecting to the shared path on the proposed bridge will be investigated during the concept design phase.

4.5 Safety

4.5.1 Safety - submissions

Issue raised in submission	Submission number	Response
Option C directs traffic onto Villiers St, a busy sporting and Showgrounds venue, concerned about impacts on safety for pedestrians, children and animals	12, 30	4.5.2.1
Concerns about trucks from bridge crashing into homes	32	4.5.2.2

Issue raised in submission	Submission number	Response
Believes traffic lights have a high crash rate	56	4.5.2.3
Concerned about safety for pedestrians at future traffic lights on Pound St and Clarence St	11	4.5.2.3
Suggested an underpass at the upgrade of Dobie St/Villiers St intersection	42	4.5.2.1
Concerns about pedestrian and cyclist safety at large roundabouts and crossing Iolanthe St	40	4.5.2.1

4.5.2 Safety – RMS Response

4.5.2.1 Pedestrian and cyclist safety

RMS has guidelines for managing the safety of pedestrian and cyclist movements on new projects. Guidelines, including the *Guide to Road Design Part 4B: Roundabouts* (Austroads, 2009) include a number of recommendations and measures aimed at improving the safety of pedestrians and cyclists at roundabouts. These guidelines will be considered in developing the design of the roundabouts at the concept design phase.

The preliminary design for the recommended preferred option includes traffic signals at the intersection of Pound Street and Clarence Street with pedestrian crossing opportunities at the intersection.

A Road Safety Audit was undertaken on each of the options (Appendix 3 of Volume 1 *Route Options Development Report*, (RMS September 2012)). Further investigations will be carried out in the next phase of the project to ensure that the concept design adequately addresses pedestrian and cyclist safety.

RMS will consult with the Grafton Showground and Clarence Valley Council during the concept design phase regarding the management of traffic impacts around the showground area.

4.5.2.2 Design of bridge for safety

The new bridge barriers will be designed in accordance with all relevant safety standards and requirements.

4.5.2.3 Traffic signals and safety

Traffic signals are normally considered for intersections with high volumes of traffic or where there is a significant imbalance of movement from one or more of the roads leading to the intersection, thus facilitating safe movement for all legs through the intersection. Traffic signals enable safe crossing for pedestrians, with a clearer distinction of the safe crossing areas, and can reduce conflict for cyclists utilising the road network.

The intersection designs will be further refined as part of the concept design phase.

4.6 Other options and alternative arrangements

4.6.1 Other options and alternative arrangements - submissions

Issue raised in submission	Submission number	Response
Preference for other options	1, 3, 6, 12, 15, 16, 23, 24, 26, 30, 32, 35, 36, 39, 43, 46, 47, 49, 50, 56, 57, 59, 60, 65, 66	4.6.2.1
Suggestion to tar the railway and put gates at each end of the bridge, thus having both decks of existing bridge for road traffic. Traffic on bottom deck would be stopped to let trains through when necessary.	44	4.6.2.2
Widen the existing bridge by cantilevering an additional lane on each side	16	4.2.2.2
Suggest go back to Option E as this was the one which has no negative impacts on pedestrians, bicycles, public transport, homes, flooding and maintenance issues	47	4.6.2.1
No need to build a bridge as the current bridge is under-utilized 90% of the time. Introduce demand management instead of building new bridge	26, 47	4.6.2.3

4.6.2 Other options and alternative arrangements – RMS response

4.6.2.1 Preference for other options

The following responses are provided in regards to other options:

- Options 14 and 15 provided the least improvements to the efficiency of the road network including during the AM and PM peak periods. Options 14 and 15 were also among the poorest performing options when assessed against functional, socio-economic and environmental criteria, were the two most expensive options and provided the least value for money.
- Although Option 11 was the lowest cost option and provided the best value for money it was, on balance, a poorer performing option than Options E and C when assessed against functional, socio-economic and environmental criteria. In particular, Option 11 has substantial amenity impacts on a quiet residential area.
- Option A was, on balance, a poorer performing option than Options E and C when assessed against functional, socio-economic and environmental criteria. It was higher cost than Option E and provided poorer value for money than both Options E and C. Option A also directly impacted on businesses, especially along Bent Street, South Grafton.
- Option E would result in impacts on the important and intact heritage precinct around Victoria and Villiers streets, does not have good connectivity for vehicles travelling north or south on the Pacific Highway, and would result in traffic from both crossings being channelled into the Fitzroy and Villiers streets intersection.

Option C was identified as the recommended preferred option as it provided the best balance across social, environmental, functional, engineering and cost factors.

4.6.2.2 Changes to existing bridge

The suggestion to modify the bottom deck of the railway to accommodate road traffic is noted, however it is not considered viable as it would not comply with current bridge design standards, would alter the heritage value of the existing bridge and require substantial changes to the surrounding local road network.

The suggestion to widen the top deck of the bridge to accommodate additional lanes for road traffic is noted, however it is not considered viable as the steel trusses at the edge of the bridge extend above the road level and it would alter the heritage value of the existing bridge.

4.6.2.3 Demand management

Demand management refers to the application of policies and strategies, as opposed to building more infrastructure, to manage traffic on a road or network. These may include measures such as promoting cycling, walking and public transport and varying work and school travel times.

Demand management strategies would not resolve the current congestion on the existing Grafton Bridge or provide traffic efficiency in the future. Traffic modelling undertaken for the project has identified that the existing bridge is currently operating near capacity with traffic efficiency being further impacted by its geometric design, including “the kinks”.

4.7 Maintenance

4.7.1 Maintenance - submissions

Issue raised in submission	Submission number	Response
Existing bridge foundations	16	4.7.2.1
Need budget for maintenance of old bridge	27	4.7.2.1
Paint the existing bridge	36	4.7.2.1
Old bridge will need removal – what is the plan and will this be hampered with the placement of new bridge in close proximity	43	4.7.2.1

4.7.2 Maintenance – RMS response

4.7.2.1 Existing bridge maintenance

Inspections, maintenance, repairs and rehabilitation of the existing bridge are carried out by Australian Rail Track Corporation Ltd (ARTC) and RMS via a partnership agreement. Bridge structure maintenance work is carried out by ARTC, and the road deck, road surface, approach spans and footway maintenance is carried out by RMS. The bridge inspections program includes regular visual, engineering and underwater dive inspections. Maintenance on the existing bridge is prioritised against the needs of other bridges on the State road network, in consideration of the available funding. Specific concerns regarding maintenance of the existing bridge have been forwarded to RMS’ asset management section.

The ongoing investigations have not identified any significant structural deficiencies with the existing bridge. In the unlikely event that the existing bridge needs to be removed, the new bridge is located a sufficient distance downstream to ensure that there would be no direct risk to the new bridge.

4.8 Noise and Vibration

4.8.1 Noise and vibration - submissions

Issue raised in submission	Submission number	Response
Noise of trucks braking when they turn	7	4.8.2.1
CBD area is larger than portrayed in comments, and noise issues will be significant with Option C	24, 56	4.8.2.2
Noise and vibration impacts from trucks along Turf St, Dobie St and Villiers St	67	4.8.2.1, 4.8.2.2
Noise impact of proximity of new bridge to homes	1, 37, 53, 59, 65, 66	4.8.2.1, 4.8.2.2
Noise mitigation treatment to address noise will destroy heritage character	32	4.8.2.2
Vehicles using new bridge will increase air pollution	1, 37, 59, 65, 66	4.8.2.3
Vibration impacts from vehicles using new bridge	37	4.8.2.2
Wants noise abatement measures to be put in place, a potential boundary realignment and security fencing during construction	53	4.8.2.2

4.8.2 Noise and vibration – RMS response

4.8.2.1 Truck noise

RMS will consult with Clarence Valley Council to confirm the location of the State Road network through Grafton with the new bridge in place. Management of the local road network will continue to be the responsibility of Clarence Valley Council. Semi-trailers and B-doubles would be required to use the new crossing, minimising the braking noise generated by conflicts between light and heavy vehicle traffic at the kinks on the existing bridge.

A detailed noise and vibration impact study will be undertaken as part of the environmental assessment. The noise impact assessment will further define potential noise impacts and mitigation measures which RMS would put in place to manage those impacts.

4.8.2.2 Noise and vibration at residences

A preliminary assessment of noise impacts is included in the *Route Options Development Report, Technical Paper: Noise Assessment* (RMS, September 2012).

A detailed noise and vibration impact study will be undertaken as part of the environmental assessment. The assessment will further define potential noise impacts and measures which RMS would put in place to manage those impacts. Should any at-residence treatments be required, further consultation will take place with impacted landowners and any heritage issues would be considered.

4.8.2.3 Air quality

Assessment of potential air quality impacts will be undertaken at the environmental assessment phase.

4.9 Heritage impacts

4.9.1 Heritage impacts - submissions

Issue raised in submission	Submission number	Response
Heritage buildings being destroyed	19, 49, 66	4.9.2.1
Option C will impact on Dovedale area which has significant heritage values, including the Glyndon Private Hospital	60	4.9.2.1

4.9.2 Heritage impacts – RMS response

4.9.2.1 Heritage impacts on buildings

It is acknowledged that the recommended preferred option would potentially directly impact on heritage items in and around Greaves Street, Pound Street and Villiers Street. Heritage impacts on listed buildings and other items will be further assessed during the environmental assessment phase. The environmental assessment will include measures which RMS would implement to manage these impacts. Opportunities to reduce direct impacts on heritage items and residences will also be further investigated at the concept design and environmental assessment phase.

4.10 Flooding

4.10.1 Flooding - submissions

Issue raised in submission	Submission number	Response
Option C puts new bridge immediately downstream of existing bridge and floods could 'take out' this bridge	16	4.10.2.5
Option C is located on Pound St's local flooding area	19, 26, 60, 66	4.10.2.2
Clarence River flooding having worse impact on the town due to Option C displacing flood plain waters through increased fill for batter slopes	19	4.10.2.1
Make sure bridge is high enough to not be damaged by flood/debris	34	4.10.2.5
Local flooding in Pound St underpass of railway viaduct is major concern	39	4.10.2.2
Impacts on flood storage capabilities in South Grafton	45	4.10.2.1
Concerns why option did not go up and connect to Centenary Dr as this would bring it out of the flood prone area	46	4.10.2.1
Lowering Pound St will exacerbate the flooding problem	49, 56, 60	4.10.2.2
Option C – both accesses/exits to the existing bridge are in a recently SES ordered evacuation area	50	4.10.2.3
Option C requires Pound St and Greaves St to be lowered increasing inundation of flood water and making it unusable for flood evacuation	50	4.10.2.2, 4.10.2.3
Flood concerns due to flash flooding around viaduct near Spring St	54	4.10.2.1
Concerned about lack of flood mitigation on existing highway, not accounting for traffic using Summerland Way when Pacific Hwy flooded, and new pylons in river impacting on flooding	35, 56, 66	4.10.2.4, 4.10.2.5
Is 9.1m high enough, or should it be higher to withstand a 1 in 200 year event	56	4.10.2.6
Concern that siltation in the river over time is increasing flood levels in the river and that the design of the new bridge needs to take this into account	34	4.10.2.7

4.10.2 Flooding – RMS response

4.10.2.1 Clarence River flooding - Flood design and impacts

The preliminary design for all six short-listed route options (including the recommended preferred option) ensures that waterway structures outside of the Grafton levee banks, including the new bridge, would be of sufficient height to withstand a 1 in 100 year Average Recurrence Interval (ARI) flood event. The main approach roads to the new bridge would be flood immune during a 1 in 20 year ARI flood event, consistent with those areas of Grafton and South Grafton located within the flood levee. For this reason, there would be little to be gained by having a greater flood immunity for the bridge approach roads.

Changes in flood storage capacity in Grafton and South Grafton as a result of construction of a new bridge and approach embankments were considered as part of the flood modelling carried out for the project.

The recent 2013 flood events in the Grafton area have been analysed to identify any flooding issues arising from the flood events that would affect the decision on the recommended preferred option. The review found the recent flood events were not localised and therefore would have little implications on the recommended preferred option. The analysis also found that the flood model used by Clarence Valley Council and for the investigations into the additional crossing accurately described the flood behaviour observed during the early 2013 flood events.

Further flood modelling will be undertaken as part of the environmental assessment for the project. The environmental assessment will describe any management measures required to ensure that the current level of flood immunity is maintained.

4.10.2.2 Flooding impacts around Pound Street

As a result of local flooding impacts around Pound Street under the railway viaducts, preliminary mitigation measures were identified in the *Route Options Development Report* (September 2012) as being required for the recommended preferred option to achieve immunity during the 1 in 20 year ARI flood event.

The preliminary drainage strategy for the recommended preferred option has been designed to be free draining (not requiring pumping) during local rainfall events which occur when the Clarence River is not in flood.

When in flood, elevated water levels within the Clarence River do not allow for gravity drainage from Grafton due to the closure of flood gates, requiring the use of the pumps to drain the Pound Street and Kent Street area.

Further assessment of flood management measures will be undertaken during the concept design and environmental assessment phase. This assessment will also include investigating the provision of a stand-by pump to manage the residual risks associated with pumping in the Pound Street and Kent Street area.

4.10.2.3 Flood and evacuation

One of the flooding design criteria for the six short-listed route options, including the recommended preferred option, included having no adverse impacts on flood evacuation of Grafton.

The *Clarence Valley Local Flood Plan* (SES, October 2008) developed by the SES defines three main evacuation routes out of Grafton. Two routes north, to Junction Hill, and one route across the existing Grafton Bridge to South Grafton. During a flood event, following overtopping of the Grafton

levees, ponding within the floodplain between Grafton and Junction Hill cuts the evacuation routes to the north. When this occurs, the only flood free route available for evacuation is via the existing Grafton Bridge to South Grafton. The efficiency of flood evacuation within Grafton is therefore largely constrained by traffic movement across the bridge.

An additional crossing of the Clarence River would benefit flood evacuation within Grafton as it would increase the efficiency of mass evacuation of Grafton during a major flood event regardless of the location.

4.10.2.4 Pacific Highway and flooding

One of the objectives of the Pacific Highway upgrade program is to improve the flood immunity of the highway. As a result, the reliance on the Summerland Way as the flood free access between the Queensland border and Grafton will be significantly reduced with the upgraded highway in place.

The high level detour at South Grafton will remain in operation when the upgrade of the Pacific Highway is in place. Improving flood immunity on the existing Pacific Highway at Alipou Creek does not form part of this project.

4.10.2.5 New bridge in close proximity to old bridge and flooding impacts

The impacts of placing additional bridge piers into the Clarence River has been considered as part of the flood studies undertaken at the route development phase. The pier alignment and span spacing will be further investigated at the concept design and environmental assessment phase. RMS has not identified any structural deficiencies with the existing bridge that would impede the ability to construct a new bridge in close proximity. In the unlikely event of failure of the existing bridge, the new bridge is located a sufficient distance downstream to ensure that there would be no direct risk to the new bridge.

4.10.2.6 Height of bridge

One of the supporting objectives for the project is to provide flood immunity for the bridge for a 1 in 100 year flood event, and for the approach roads for a 1 in 20 year flood event, where economically justified. This is an RMS requirement for major bridges and is consistent with the *Austrroads Road Design Guidelines* and the *RTA Supplements to the Austrroads Design Guidelines*. Waterway structures would be of sufficient height to maintain acceptable freeboard during a 1 in 100 year flood event as defined in Chapter 4.5 of the *Route Options Development Report* (September 2012).

Notwithstanding this, while the design flood is the 1 in 100 year ARI flood event, the flood modelling has considered a range of flood events including peak flood levels, velocities and flows for the 5, 20 and 100 year ARI flood events, and the probable maximum flood (PMF) event.

This review of the above design guidelines and the flood levels indicates that the design height for the recommended preferred option is appropriate.

4.10.2.7 Siltation in the Clarence River

Riverbed surveys would be carried out at a point prior to construction to determine if there is evidence of siltation or scouring that could affect the flood modelling or the design and construction of the new bridge.

4.11 Social impacts

4.11.1 Social impacts - submissions

Issue raised in submission	Submission number	Response
Open areas left in the vicinity of new bridge after construction will attract antisocial elements	32	4.11.2.2
Street closures affecting Jacaranda Festival, and Bridge to Bridge also impacted	56	4.11.2.3
Lifestyle impacts of directing more traffic into centre	56	4.11.2.1, 4.1.2.7
Have impacts of lighting high structure on adjacent residents been investigated	56	4.11.2.1
Will box-in residents of Clarence St between Fitzroy St and Pound St	59	4.11.2.3

4.11.2 Social impacts – RMS response

4.11.2.1 Social Impacts - General

All options for the additional crossing have potential social impacts as described in the *Route Options Development Report* (RMS, September 2012).

The environmental assessment on the preferred option will describe potential project impacts including any amenity impacts on the community. The assessment will also discuss any impacts associated with changed traffic patterns and the implementation of the new bridge in general, and describe the measures that RMS will put in place to manage those impacts.

The requirement for street lighting will be considered at the concept design stage. Any potential impacts from additional lighting would be considered in the environmental assessment.

4.11.2.2 Design of open areas

RMS will continue to consult with Clarence Valley Council during the environmental assessment and concept design phase to ensure that open space areas around the new bridge consider all relevant Clarence Valley Council requirements.

4.11.2.3 Street closures affecting residential access and events

Some changes are proposed to the existing local road network within Grafton and South Grafton as a result of the new bridge and associated local road upgrades. The eastern end of Pound Street and the southern end of Kent Street would not connect through to the Grafton CBD under the current design for the recommended preferred option. Connectivity to the Grafton CBD would however be available via Bacon Street or via Greaves Street under the Kent Street viaduct and down Fitzroy Street.

The recommended preferred option would be expected to provide increased flexibility for the management of traffic (including street closures) associated with major events. It is not expected that the additional crossing would have any significant impacts on local events such as the Jacaranda festival or Bridge to Bridge ski race.

4.12 Amenity: streetscape and views

4.12.1 Amenity: streetscape and views - submissions

Issue raised in submission	Submission number	Response
Concern about loss of trees in Villiers St, Pound St and Dobie St	30, 49	4.12.2.1
Impacts on tourism with visual amenity impact of new bridge on existing bridge	56, 66	4.12.2.2
Jacaranda trees on north side will be lost with upgrades and are very important to Grafton	56	4.12.2.1.
Visual impact of proximity of new bridge to homes	37	4.14.2.2

4.12.2 Amenity: streetscape and views – RMS response

4.12.2.1 Removal of trees

The recommended preferred option would potentially impact a number of large trees. RMS will further explore measures to minimise potential impacts on trees (including fig and jacaranda trees) and opportunities for additional landscaping treatments as part of the environmental assessment and concept design phase of the project.

4.12.2.2 Impacts on views

It is acknowledged that some residents living nearby the additional crossing would experience adverse visual impacts and that the recommended preferred option impacts on some views to the existing bridge.

A detailed urban design and visual impact assessment will be prepared as part of the environmental assessment and concept design phase of the project. This assessment will be prepared in consultation with Clarence Valley Council and will identify measures to manage the visual impacts.

4.13 Construction impacts

4.13.1 Construction impacts - submissions

Issue raised in submission	Submission number	Response
Trucks accessing local streets during construction carrying construction material	49	4.13.2.1
Construction and operation of Option C will have significant impacts on property including noise and vibration, dust and privacy impacts during construction, and noise and pollution once in operation	32, 37, 56, 59	4.13.2.1
Disruption to businesses during construction	45	4.13.2.1

4.13.2 Construction impacts – RMS response

4.13.2.1 Construction impacts

Construction impacts will be assessed as part of the environmental assessment. The assessment will include construction noise and vibration, traffic and access, visual amenity, air quality and other construction related impacts.

Prior to commencing construction, RMS would usually be required to prepare a Construction Environmental Management Plan (CEMP). The CEMP identifies the potential impacts during construction and the measures that would put in place to reduce and manage those impacts. Typically, RMS would undertake pre and post dilapidation surveys on infrastructure and residences nearby the project. In the unlikely event that damage occurs as a result of the construction of the new bridge, RMS would be responsible for any rectification works.

4.14 Property and business impacts

4.14.1 Property and business impacts - submissions

Issue raised in submission	Submission number	Response
Concerned about property acquisition, size of acquisition required and timing for acquisition	10	4.14.2.1
Concern about loss of on-street parking for business in and around Pound St as well as access for loading areas	11, 57, 58, 60, 67	4.14.2.2
Concerned that property about to purchase may be impacted by Option C	21	4.14.2.1
Concern about impacts of upgraded roundabout on property	22	4.14.2.1
Concerned about property acquisition and timing	24, 29,30,31, 37	4.14.2.1
Concerns about impacts on property, including devaluation and future use and amenity	21, 32, 37, 49, 53, 58, 59, 63	4.14.2.1
Concerned about distance to new bridge from property	37	4.14.2.1
Concern about road widening at intersection of Skinner St and Gwydir Hwy as to impacts on property	62	4.14.2.1

4.14.2 Property and business impacts – RMS response

4.14.2.1 Property impacts

The term “directly affected property” was defined in the *Route Options Development Report* (September 2012) as where a route option is likely to require full or partial acquisition of the property. The intention of defining this term relating to property acquisitions was to differentiate circumstances where property acquisition was necessary (thus there was a direct property impact) as opposed to indirect impacts, for example road traffic noise or visual impacts.

RMS acquires land under the terms and provisions of the *Land Acquisition (Just Terms Compensation) Act* 1991. The Act does not provide a means for compensating indirect impacts. RMS seeks to manage indirect impacts through the environmental assessment and design refinement at the concept design phase of the project. The environmental assessment will clearly define the indirect impacts and include information of what management measures (for example noise mitigation) would be put in place to manage those impacts.

Following confirmation of the preferred option, RMS is able to consider owner initiated acquisition under hardship for properties directly impacted by the preferred option. These acquisitions will be considered in accordance with the *Land Acquisition Information Guide* (RMS, February 2012).

4.14.2.2 On Street parking

In response to feedback received on the recommended preferred option, RMS has made further refinements in regards to access and on-street parking arrangements in and around Pound Street between Clarence Street and Duke Street, as outlined in Chapter 6 of this report.

RMS will continue to consult with Clarence Valley Council and business owners as part of the concept design phase.

4.15 Cost and cost benefit analysis

4.15.1 Cost and cost benefit analysis – submissions

Issue raised in submission	Submission number	Response
Community will understand benefits of bridge if more detail was provided on benefit cost ratio, suggested this occur in project reports	28	4.15.2.1
Option C was chosen because it was the cheapest option	1, 24, 49, 56	4.15.2.1

4.15.2 Cost and cost benefit analysis – RMS response

4.15.2.1 Costs and benefits of project

A strategic cost estimate and economic evaluation for the recommended preferred option has been undertaken and was reported in the *Recommended Preferred Option Report* (RMS, December 2012). Further details were provided in the *Route Options Development Report, Technical Paper: Strategic Cost Estimates* and *Technical Paper: Economic Evaluation* (RMS, September 2012).

The project estimate will be further refined as part of the development of the concept design.

A benefit cost ratio analysis is one of several inputs used to describe the benefits of the recommended preferred option.

As identified in the project objectives, the preferred route would also:

- Enhance road safety for all road users over the length of the project
- Improve traffic efficiency between and within Grafton and South Grafton
- Support regional and local economic development
- Involve all stakeholders and consider their interests
- Provide value for money
- Minimise impact on the environment.

Option E was the lowest cost option. Option C was identified as the recommended preferred option as it provided the best balance across social, environmental, functional, engineering and cost factors.

4.16 Timing

4.16.1 Timing - submissions

Issue raised in submission	Submission number	Response
Looking forward to announcement of a start date	5	4.16.2.1
Just build the bridge	9	4.16.2.1
New bridge needs to be built as a priority	14, 43	4.16.2.1
Sceptical about bridge having assumed date of opening in 2019	19, 28, 56, 65	4.16.2.2
Timing for works on Iolanthe St, specifically with regard to any disruptions	45	4.16.2.1
Concerns about timing of building – especially if property is to be acquired this means long period of uncertainty	30, 32	4.16.2.1

4.16.2 Timing – RMS response

4.16.2.1 Start date for construction

Funding has now been made available to prepare a concept design and environmental assessment for the project in readiness for construction. At this stage a construction program has not yet been finalised.

4.16.2.2 Assumed 2019 as a date for bridge opening

The assumed 2019 date of opening of the additional crossing to traffic was used as a basis for undertaking the traffic analyses for the short-listed options, to establish an understanding of what the traffic volumes would be in the future.

Changes in the assumed date of opening would have little effect on the traffic modelling or the selection of the recommended preferred option.

4.17 Consultation process

4.17.1 Consultation process – submissions

Issue raised in submission	Submission number	Response
Community consultation was a farce, this option was decided on right from the beginning	1, 9, 30, 47, 65	4.17.2.1
At displays concerns were dismissed by staff	1	4.17.2.1
Information provided just before Christmas with little time to reply	4	4.17.2.2
Comments and concerns throughout process not listened to	19, 47, 65, 66	4.17.2.1
Critical of decision making process. Community update listing reasons is very open ended and focused on monetary aspect.	56	4.17.2.1
Did not support timing of staffed displays being on Thursdays from 9am-4pm when most people work, should have been on Saturday	56	4.17.2.2
Raised concerns about inadequate consultation	57, 58	4.17.2.1
Raised matter of concerned citizens group and petition of over 1000 signatures – why hasn't this been taken into consideration	60	4.17.2.1

Issue raised in submission	Submission number	Response
Shoppingworld had an undue influence on the choice of Option C	30	4.17.2.1

4.17.2 Consultation process – RMS response

4.17.2.1 Comments from community

All feedback received from the community has been considered by RMS throughout the development of the project. RMS has prepared submissions reports which provided responses to comments received on the six short-listed route options and the recommended preferred option. Summary reports of additional community input received on this project have also been prepared, and are available on the project website.

The decision making process incorporated the outcomes of extensive technical studies, community feedback and a Value Management workshop which included community representatives, key stakeholders, government agencies and members of the project team.

In response to community feedback on the recommended preferred option, refinements to the preliminary design have been made and are described in Chapter 6 of this report.

Options E, A and C all directed traffic past Shoppingworld. Option C was chosen as the recommended preferred option for the reasons outlined in the *Recommended Preferred Option Report* (RMS, December 2012).

An independent peer review of the traffic and transport assessments and best practice community consultation was undertaken in 2012 by the Institute of Environmental Studies, Faculty of Science at the University of New South Wales. The review is documented in the *Additional crossing of the Clarence River, Grafton - Route Options Development Report: peer review of traffic and the strategic models, and best practice community consultation* (UNSW, March 2013). The review concluded that the project team approach to community involvement and communication fulfilled the RMS policy, in regards to information gathering, consultation, community involvement and partnering with the public in the development of alternatives and the identification of the preferred solution. Furthermore, the research results showed that most community involvement outcomes sought by the RMS policy have been achieved.

4.17.2.2 Timing of consultation and staffed displays

RMS was seeking to announce the recommended preferred option by the end of 2012 to provide the community with some certainty with regards to a location for a recommended preferred option as early as possible. The consultation period was extended to 4 March 2013 to account for the flooding events in January.

Two staffed displays were initially scheduled for Thursdays 31 January 2013 and 7 February 2013 during the exhibition period. Submissions on the recommended preferred option were initially invited from the community and other stakeholders by Monday 18 February, 2013.

Following prolonged wet weather and flooding impacts on the Grafton community during January 2013, the staffed displays were rescheduled to 14 February and 21 February 2013. The submissions period was also extended until 4 March 2013 to allow for the time of the rescheduled staffed displays, however, submissions received up until 8 March 2013 were included. The rescheduling of the staffed displays and the extension of the submission period were announced on 30 January 2013 and advertised widely, including on the RMS project website.

RMS has provided a variety of forums for the community to talk to the project team and access information on the options for the additional crossing with representatives of the project team being available to discuss community concerns outside the formal display periods. The project team will continue to remain available to discuss the project with the community

A full list of consultation activities, dates, times and methods undertaken during the display of the recommended preferred option is included in Appendix 1.

4.18 Support for recommended preferred option

4.18.1 Support for recommended preferred option - submissions

Issue raised in submission	Submission number	Response
Supports Option C	5, 8, 9, 13, 17, 18, 25, 28, 33, 38, 41, 45, 48, 54, 55, 64	4.18.2
Option C logical from the start	9	4.18.2
Option C is a common sense approach for future of Grafton	13	4.18.2
Option C would be an investment that benefits Grafton and the wider community for many years	17	4.18.2

4.18.2 Support for recommended preferred option – RMS response

RMS acknowledges the support for the recommended preferred option and the process followed.

4.19 Suggested improvements to the recommended preferred option

4.19.1 Suggested improvements to the recommended preferred option - submissions

Issue raised in submission	Submission number	Response
Iolanthe St to not become part of Pacific Hwy. Make Pacific Hwy roundabout 4 exits instead of 3 and commuters can use Iolanthe St and highway traffic stays on highway	16	4.19.2.1
Add railway overpass in Through St	16	4.19.2.2
No need to upgrade roundabout at Skinner St and Gwydir Hwy	20	4.19.2.1
Build a road on the land adjacent to the existing railway line	20	4.19.2.3
Move roundabout on Ryan St to Kelly St	33	4.19.2.4
Use empty service station for truck parking	33	4.19.2.4
Traffic lights on Iolanthe St instead of roundabouts	33	4.19.2.1
Left turn out of Spring St may be a problem for traffic going into McDonalds	33	4.19.2.1
Continue existing Pacific Hwy as service road for traffic going to schools in Clarenza to reduce traffic through roundabout on Iolanthe St	33	4.19.2.4
Upgraded signage for businesses with diversion of existing Pacific Hwy	45	4.19.2.6
Positioning of smaller roundabout along Ryan St between Kelly St and Armidale St needs to be moved to the start of Armidale St to have better intersection control here.	52	4.19.2.4

Issue raised in submission	Submission number	Response
Treatment of Iolanthe St approach to bridge to be treated as gateway into Grafton with appropriate landscaping treatment.	54	4.19.2.5
Part of design should highlight access to South Grafton CBD	54	4.19.2.6

4.19.2 Suggested improvements to the recommended preferred option – RMS response

4.19.2.1 Iolanthe Street and Skinner Street roundabouts and Pacific Highway

An underlying assumption considered when preparing the preliminary design was that the Pacific Highway upgrade between Glenugie and Tyndale would be in place prior to the completion of construction of the new bridge. This means that there would be substantially less through traffic on the existing Pacific Highway. Without diversion of the Pacific Highway, a much larger roundabout would be required at the Pacific Highway/Gwydir Highway/Iolanthe Street intersection and property acquisition would be substantially increased.

The two proposed roundabouts on Iolanthe Street provide U-turn facilities for traffic going to and from Spring Street.

Traffic modelling undertaken for the recommended preferred option has identified that the proposed upgrades in South Grafton, including the roundabouts, would be required to satisfactorily address future traffic growth and could do so without the need for traffic signals. These upgrades may not be required when the new bridge is initially opened to traffic.

4.19.2.2 Railway overpass in Through Street

The preliminary design shown in the *Recommended Preferred Option Report* (RMS, December 2012) was prepared to provide an acceptable level of service in 2049. A railway overpass at Through Street is not required and it would add significant cost to the project.

4.19.2.3 Construction of road on land adjoining railway line

The existing railway easement is not wide enough to support an additional road alongside, and would require the acquisition of several properties.

4.19.2.4 Design changes and use of vacant land

Traffic modelling undertaken for the recommended preferred option indicates that the preliminary design would present a road network that would provide an acceptable level of service in 2049.

RMS will further consider opportunities to maximise use of public land and the existing road reserve at the concept design phase.

4.19.2.5 Landscaping and treatments

Urban design and landscaping treatments will be examined as part of the concept design and environmental assessment phase. RMS will consult with Clarence Valley Council to ensure that any proposed urban design and landscaping treatments are compatible with Clarence Valley Council requirements and the character of the surrounding areas.

4.19.2.6 Upgrading of signage

Signage would be an important component of the change traffic arrangements. Proposals for addressing both existing and new directional signage would be developed prior to construction in consultation with Clarence Valley Council and stakeholders including the Grafton Chamber of Commerce and Industry. All signage would be implemented in accordance with the relevant RMS and Clarence Valley Council requirements.

5 Identification of the preferred option

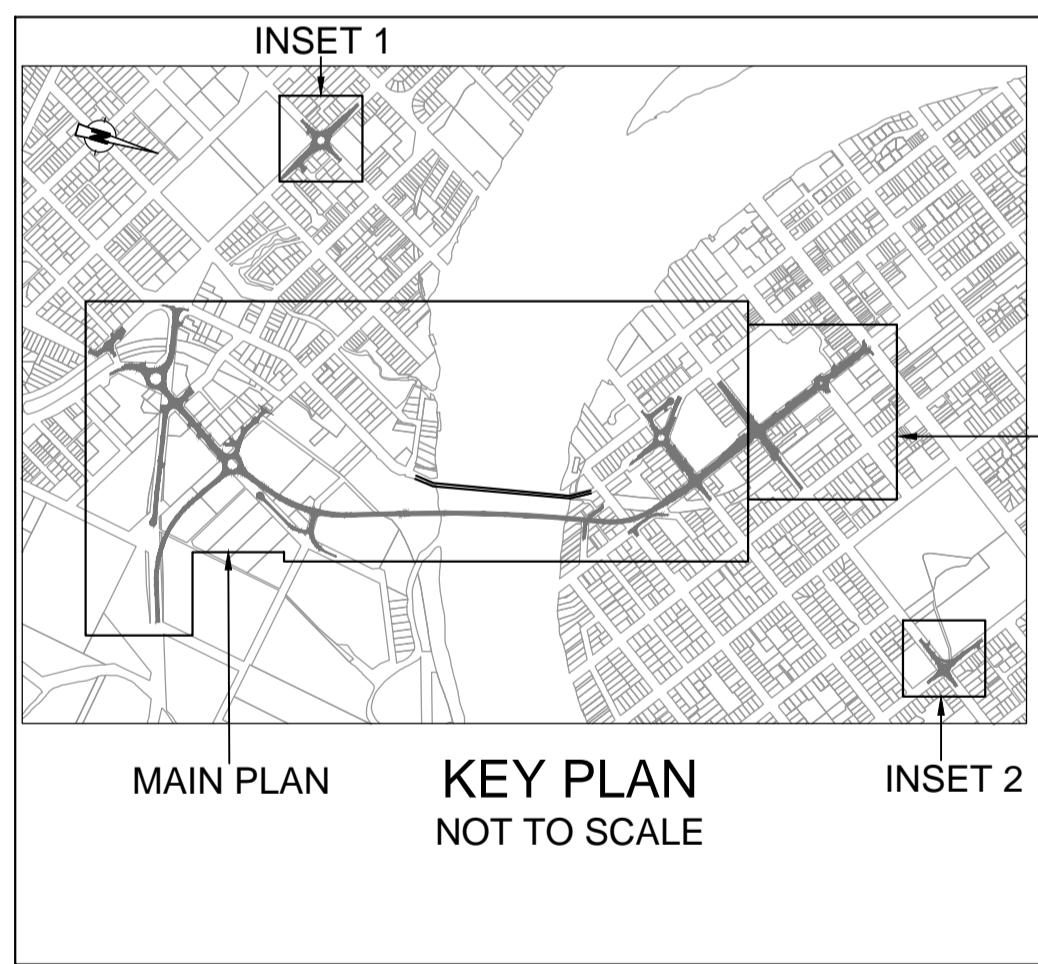
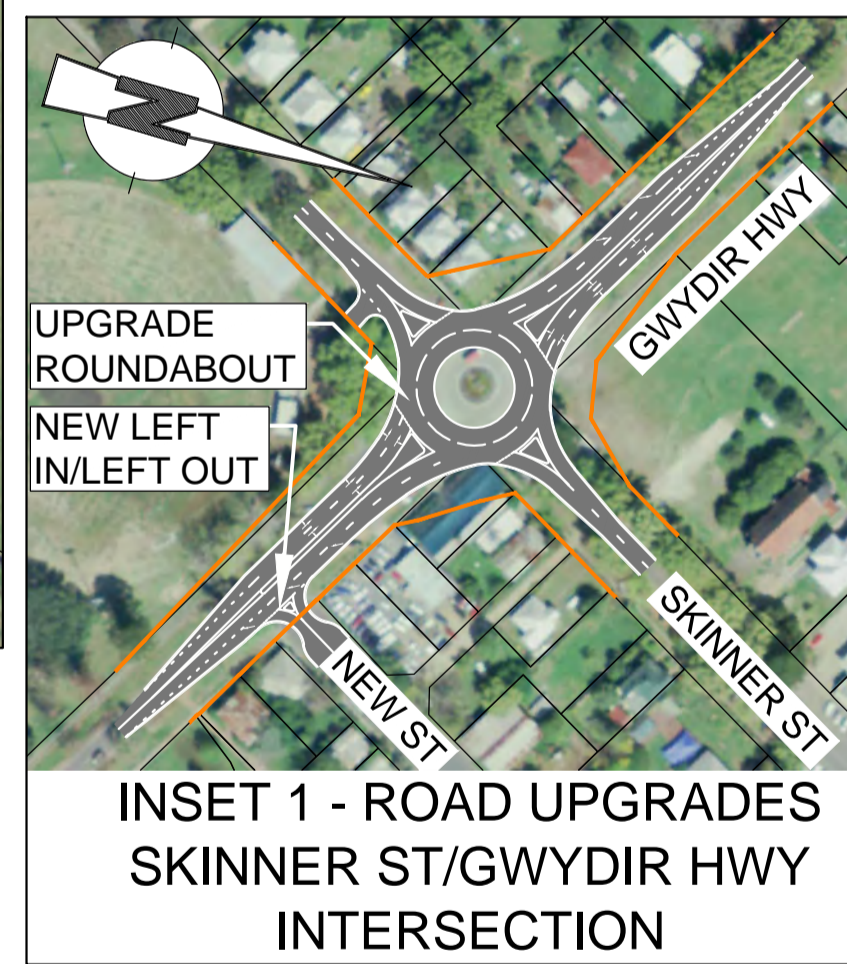
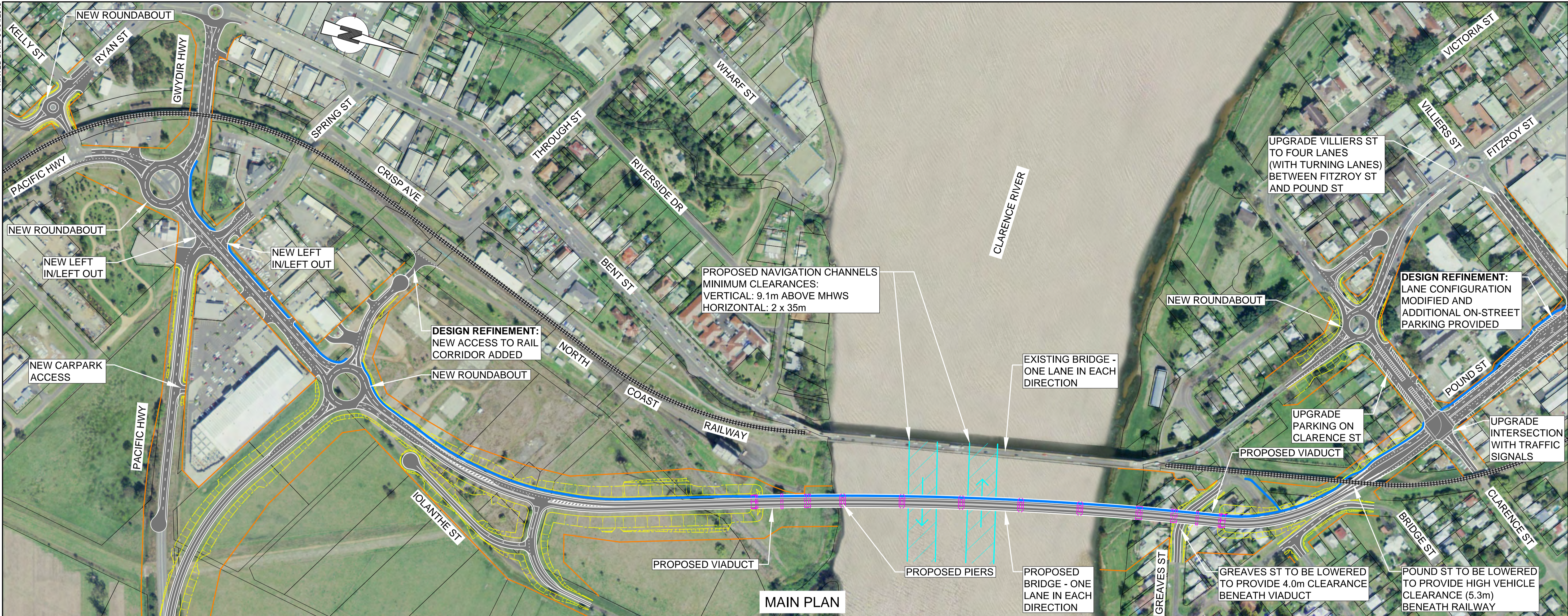
RMS has carefully considered the community feedback received on the recommended preferred option (Option C) and recommended to the Minister that Option C be confirmed as the preferred option for an additional crossing of the Clarence River at Grafton. The key reasons for the recommendation are:

- On balance it best meets the project objectives of the six short listed options;
- It best meets the short and long term traffic network needs for the Grafton region
- The public feedback has not raised any new significant issues which would alter the recommendation.

The Minister has endorsed that Option C be confirmed as the preferred option for an additional crossing of the Clarence River at Grafton.

Refinements have been made to the recommended preferred option following RMS review of the preliminary design, stakeholder consultation and feedback received during the public display of the *Recommended Preferred Option Report* (RMS, December 2012). These refinements are described in Chapter 6 and shown in the engineering plan and longitudinal section drawing overleaf.

The engineering plan shows the upgrades required to cater for predicted traffic volumes through to about 2049 (30 years after the modelled date of opening of 2019 of the additional crossing). Only some of the upgrades (e.g. intersection upgrades and road widening) shown would be required when the additional crossing is initially opened to traffic. Further work could be undertaken when required to cater for increases in traffic volumes. Staging opportunities will be further investigated during concept design and preparation of the environmental assessment for the preferred option.

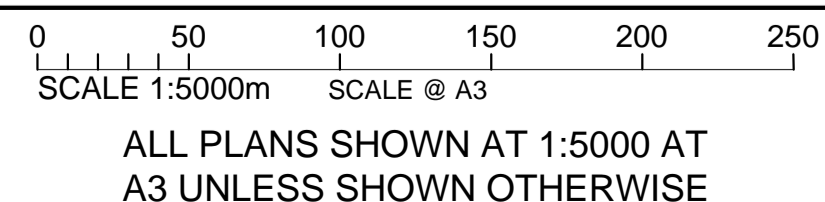
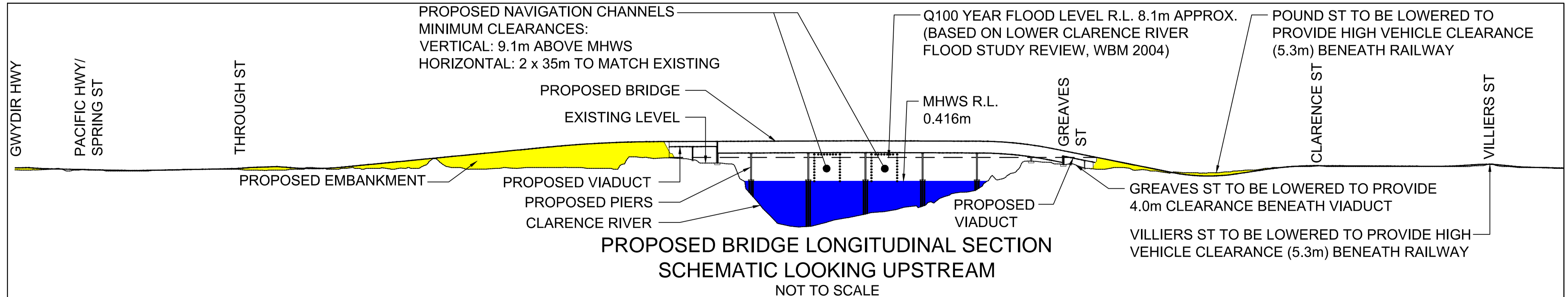
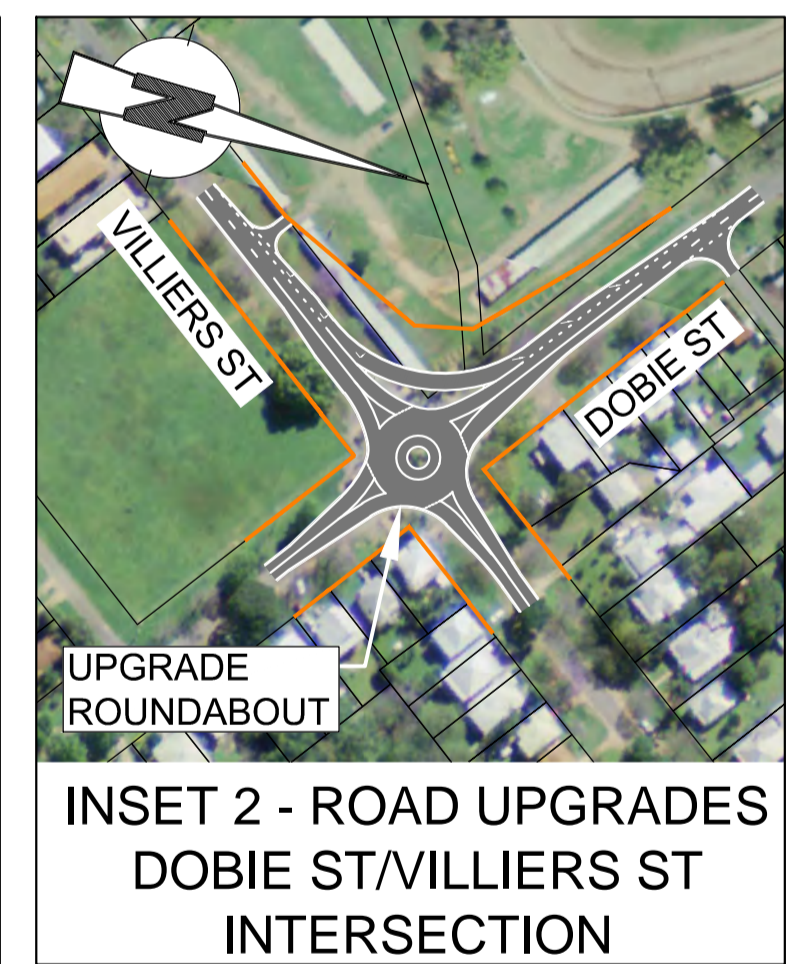


LEGEND:

- PROPOSED EMBANKMENT
- CADASTRAL BOUNDARY
- INDICATIVE ROAD BOUNDARY
- PROPOSED SHARED PATH
- PROPOSED PIERS AND ABUTMENT STRUCTURES

NOTES:

- THE PLANS SHOW NETWORK IMPROVEMENTS REQUIRED FOR THE TRAFFIC VOLUMES MODELLED IN 2049. NOT ALL IMPROVEMENTS WOULD BE REQUIRED AT OPENING BUT WOULD BE ADDED IN STAGES AS TRAFFIC DEMAND GROWS.
- CADASTRAL BOUNDARIES ARE INDICATIVE ONLY.
- ACCESS SHOWN FOR MAJOR COMMUNITY FACILITIES AND BUSINESSES.



6 Design refinements

The refinements made to the recommended preferred option, as a result of consultation with key stakeholders and feedback received during the public display of the *Recommended Preferred Option Report* (RMS, December 2012), are described below:

- **Improved on-street parking and access adjustments to the TAFE and to businesses on Pound Street and Villiers Street, Grafton;**

Some concerns were raised around the loss of on-street parking and access to businesses on Pound Street and Villiers Street. As a result, the preliminary concept design shown in the *Recommended Preferred Option Report* (RMS, December 2012) has been refined to maintain an adequate level of on-street parking.

The on-street parking along Pound Street, between Clarence Street and Villiers Street for businesses and the TAFE has been designed to accommodate 53 spaces with the potential for an additional six spaces during off-peak hours. In order to accommodate this additional parking, it is proposed that the two Pound Street entrances to the TAFE car park would be closed and the indicative road boundary is refined to slightly increase the extent of potentially directly affected TAFE land.

The on-street parking along Clarence Street, between Pound Street and Craig Street has been designed to accommodate 35 spaces in the median strip to allow improved access into the TAFE from Clarence Street.

The lane configuration on Pound Street between Villiers Street and Duke Street has been adjusted to increase the number of on-street car parking spaces from 30 spaces to 41 spaces.

Minor refinements have also been made to the Villiers Street southbound approach to the Pound Street intersection, providing six on-street parking spaces on Villiers Street. The Villiers Street southbound approach to the Pound Street intersection was identified as a four lane approach in the *Recommended Preferred Option Report* (RMS, December 2012). The layout has now been adjusted to reduce the southbound approach at this point from four lanes to three lanes. The indicative road boundary has been adjusted, reducing the extent of potentially directly affected land of a nearby property.

Overall, the refinements provide an additional 53 on-street parking spaces in the vicinity of Pound Street compared to the recommended preferred option, plus an additional six spaces during off-peak hours.

- **Adjustment to the indicative road boundary at the intersection of Craig Street and Clarence Street, Grafton;**

The indicative road boundary has been refined on the southern corner of the intersection of Craig Street and Clarence Street, to reduce the extent of property acquisition. The point at which the indicative road boundary meets the property boundary on Clarence Street has been moved approximately 20 metres northeast along Clarence Street.

- **Additional access connection to rail corridor from Through Street east, South Grafton.**

A private access road connection into the rail corridor has been added from the Through Street cul-de-sac through to the access road running parallel to the railway line.

In addition, following RMS review of the option layout, the following refinements have also been made to the recommended preferred option:

- **Adjustment to the indicative road boundary on the corner of Bridge Street and Pound Street, Grafton;**

The design of the Bridge Street access off Pound Street has been refined and the pre-school is no longer directly affected by the preferred option.

- **Adjustment to the indicative road boundary at Pound Street east, Grafton;**

Refinement of the indicative road boundary to address future maintenance requirements.

An engineering plan and longitudinal section drawing showing the preliminary concept design of the preferred option is provided in Chapter 5.

7 Next steps

The recommended preferred option is confirmed as the preferred option for an additional crossing of the Clarence River at Grafton. An environmental assessment of the concept design for the preferred option will now be prepared and displayed for community and stakeholder comment.

The process to identify a preferred option is shown in the flow chart in Figure 3 below.



Figure 3: Process to identify a preferred option

Appendix 1 – Summary of community consultation activities for the recommended preferred option

The *Recommended Preferred Option Report* (RMS, December 2012) was placed on exhibition from 19 December 2012 to 4 March 2013 and a community update was widely distributed. A number of consultation activities were held to ensure that information was received by the wider community and opportunities were available for comment and questions.

Staffed displays

At the staffed displays the project team representatives (RMS and Arup) were available to take feedback and answer questions. Copies of the community update and *Recommended Preferred Option Report* (RMS, December 2012) were available to pick up.

Displays were held at Grafton Shoppingworld on 14 February and 21 February 2013, from 9am to 5pm

Static displays

Static (unstaffed) displays were placed on public exhibition from 19 December 2012 at the locations listed below. These included posters illustrating the recommended preferred option, copies of the community update and at limited locations display reports.

- Roads and Maritime Services Pacific Highway Office, 21 Prince Street, Grafton
- Roads and Maritime Services Motor Registry Office, 3 King Street, Grafton
- Roads and Maritime Services Regional Office, 31 Victoria Street, Grafton
- Grafton Council Chambers and Grafton Library, 2 Prince Street, Grafton
- Ulmarra Petrol Station/Post Office, Pacific Highway, Ulmarra
- South Grafton News and Gifts, 38 Skinner Street, South Grafton
- General Store Coutts Crossing, Armidale Road, Coutts Crossing
- Junction Hill Family Store, 5 Casino Road, Junction Hill
- Maclean Council Office, 50 River Street, Maclean
- Yamba Library, Wooli Street, Yamba

Advertising

The exhibition of the *Recommended Preferred Option Report* (RMS, December 2012) was advertised in the newspapers. Newspapers and publication dates included:

- Advertisement 1:
 - Grafton Daily Examiner, 24, 25 and 31 January and 2 February 2013
 - Yamba Clarence Valley Review, 23 and 31 January 2013
 - Maclean Coastal View, 25 January and 1 February 2013.

The rescheduled staffed displays and revised closing date for submissions was advertised as per the following:

- Advertisement 2 (revised dates of staffed displays):
 - Grafton Daily Examiner, 9, 14, 16 and 21 February 2013

- Yamba Clarence Valley Review, 13 and 20 February 2013
- Maclean Coastal View, 15 February 2013

Website

The website provided information on the staffed displays, message updates from the project manager, key documents, as well as providing a complete project history and access to previous community and project documents.

Project email address

A project email address was maintained throughout the consultation period. Enquiries and comments received were considered as part of the process to determine the preferred route for the additional crossing of the Clarence River.

Project telephone number

An 1800 number was maintained throughout the consultation period. Project team members responded to technical enquires as required and attended one-on-one meetings with potentially impacted property owners, residents and businesses.

Project database

All contact with the project team was logged in the project consultation database.

Recommended Preferred Option Report submissions

Submissions on the report were received:

- At staffed displays, recorded by the project team
- By mail or hand delivery
- By email
- By telephone to the project office and 1800 number.

Each submission was registered, given a unique number and included in the project consultation database. It was also summarised in this report.

Consultation with potentially impacted property and business owners

In conjunction with the display of the *Recommended Preferred Option Report* (RMS, December 2012), RMS contacted property owners potentially directly affected by the recommended preferred option. Letters were sent on 19 December 2012 advising property owners of the recommended preferred option. A number of owners requested meetings by phoning the 1800 number, emailing the project email address, attending the staffed displays or writing to the project team. The project team followed these up with individual and group meetings.