Appendix 5 – Preliminary route options constraint mapping

This appendix presents the preliminary constraint mapping for each of the 25 preliminary route options. Information presented on these maps is sourced from the review of the Grafton area existing environment and constraints presented in Chapter 5.

COWANS CREEK

SUSAN ISLAND

SOUTH GRAFTON

GRAFTON

CLARENCE RIVER

GWYDIR HIGHWAY

Abbott Street

Cowan Street

Kennedy Street

Bank Street

Vere Street

Cowan Lane

Edward Street

Edward Lane

Skinner Street

New Street

Zuber Lane

Through Lane

Ryan Lane

Spring Street

Beatson Street

Anvil Lane

Wharf Street

Farm Lane

Riverside Drive

Blackwood Close

Queen Street

Chatsworth Street

Fitzroy Street

King Street

Prince Street

Dellows Lane

PRINCE STREET

Victoria Street

Fitzroy Street

Villiers Street

Clarence Street

Pound Street

F

E

LEGEND

- Preliminary route option centrelines
- Major roads
- Minor roads
- Rail
- Streams/Creeks
- 66kV Power
- Flood levees (Source: Survey, A Fletcher and Associates, 2000)
- Flooding extents - 1:20 year ARI event (Source: Lower Clarence River Flood Study Review Final Report, March 2004)
- Commonwealth, National, State and Regional heritage items (Sources: State Heritage Register, Section 170 Register of the Heritage Act 1977, North Coast REP 1988, National Shipwrecks Database, Commonwealth Heritage List, Register of the National Estate, National Trust Register)
- LEP heritage items (Source: Grafton LEP1988)
- High Aboriginal archaeological potential (Source: Technical Paper - Aboriginal)
- Known Aboriginal cultural values/places (Clarence River not shown for clarity) (Source: Technical Paper - Aboriginal)
- Non-Aboriginal archaeological sensitive areas (Source: Technical Paper - Non-Aboriginal)
- Potential social & economic constraints (Source: Technical Paper - Social & Economic)
- Potential ecological constraints (Source: Technical Paper - Ecology)
- Urban conservation area (Source: Grafton LEP 1988)
- Corridor 1 (Upstream of the existing bridge)

Constraints outside Corridor are faded

Preliminary Constraints for Corridor 1

ARUP

NSW GOVERNMENT Transport Roads & Maritime Services

SCALE @ A3
1:5,000

N

Meters
0 25 50 100

Projected Coordinate System: GDA 1994, MGA Zone 56

Data Source: ARUP 2011

Date Created: 6/12/2011

LEGEND

- Preliminary route option centrelines
- Major roads
- Minor roads
- Rail
- Streams/Creeks
- 66kV Power
- Flood levees (Source: Survey, A Fletcher and Associates, 2006)
- Flooding extents - 1:20 year ARI event (Source: Lower Clarence River Flood Study Review Final Report, March 2004)
- Commonwealth, National, State and Regional heritage items (Sources: State Heritage Register, Section 170 Register of the Heritage Act 1977, North Coast REP 1988, National Shipwrecks Database, Commonwealth Heritage List, Register of the National Estate, National Trust Register)
- LEP heritage items (Source: Grafton LEP1988)
- Constraints outside of Corridor are faded
- High Aboriginal archaeological potential (Source: Technical Paper - Aboriginal)
- Known Aboriginal cultural values/places (Clarence River not shown for clarity) (Source: Technical Paper - Aboriginal)
- Non-Aboriginal archaeological sensitive areas (Source: Technical Paper - Non-Aboriginal)
- Potential social & economic constraints (Source: Technical Paper - Social & Economic)
- Potential ecological constraints (Source: Technical Paper - Ecology)
- Urban conservation area (Source: Grafton LEP 1988)
- Corridor 2 (adjacent to the existing bridge)

SUSAN ISLAND
SOUTH GRAFTON
GRAFTON
GWYDIR HIGHWAY
PACIFIC HIGHWAY
ARMIDALE ROAD
BENT STREET
RYAN STREET
PRINCE STREET
CLARENCE RIVER
ALIPOU CREEK
MUSK VALLEY CREEK
Abbott Street
Kennedy Street
Bank Street
Cowan Street
Cowan Lane
Edward Street
Edward Lane
Skinner Street
New Street
Zuber Lane
Through Lane
Ryan Lane
Beatson Street
Spring Street
Wharf Street
Through Street
Riverside Drive
Crisp Avenue
Bligh Street
Vere Street
Cambridge Street
Ridge Street
Riverview Street
Frair Lane
Bent Lane
Kelly Street
Jubilee Avenue
Ryan Street
Federation Street
Reid Street
Iolanthe Street
Hunter Lane
Heber Street
Valley Street
Prince Street
Victoria Street
Chataway Street
Fitzroy Street
Robinson Avenue
Mary Street
King Lane
King Street
Queen Street
Dellows Lane
Little Bacon Street
Pound Street
Bacon Street
Villiers Street
Woodward Street
Clarence Street
Oliver Street
Kent Street
Bromley Street
Sutton Street
Greaves Street
Fry Street
Welley Avenue
Waratah Place
Breimba Street
Frazer Lane
McHugh Street
5
6
8
9
10
A
B
C, D
G, H, C
I
D

Preliminary Constraints for Corridor 2

ARUP

NSW GOVERNMENT Transport Roads & Maritime Services

SCALE @ A3 1:8,000

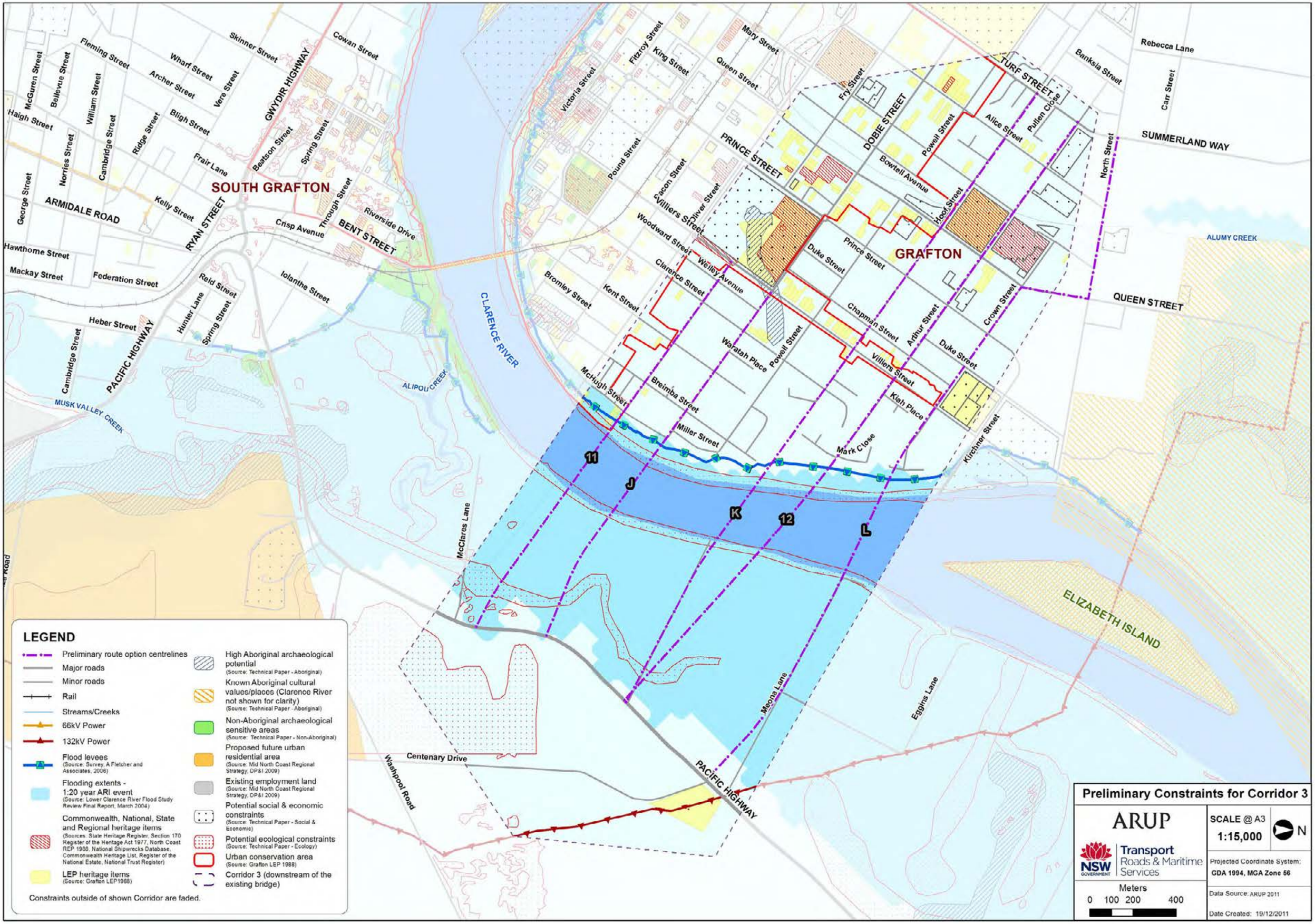
N

Meters 0 50 100 200

Projected Coordinate System: GDA 1994, MGA Zone 56

Data Source: ARUP 2011

Date Created: 19/12/2011



LEGEND

- Preliminary route option centrelines
- Major roads
- Minor roads
- Rail
- Streams/Creeks
- 66kV Power
- 132kV Power
- Flood levees (Source: Survey, A Fletcher and Associates, 2006)
- Flooding extents - 1:20 year ARI event (Source: Lower Clarence River Flood Study Review Final Report, March 2004)
- Commonwealth, National, State and Regional heritage items (Sources: State Heritage Register, Section 170 Register of the Heritage Act 1977, North Coast REP 1988, National Shipwrecks Database, Commonwealth Heritage List, Register of the National Estate, National Trust Register)
- LEP heritage items (Source: Grafton LEP1988)
- High Aboriginal archaeological potential (Source: Technical Paper - Aboriginal)
- Known Aboriginal cultural values/places (Clarence River not shown for clarity) (Source: Technical Paper - Aboriginal)
- Non-Aboriginal archaeological sensitive areas (Source: Technical Paper - Non-Aboriginal)
- Proposed future urban residential area (Source: Mid North Coast Regional Strategy, DP&I 2009)
- Existing employment land (Source: Mid North Coast Regional Strategy, DP&I 2009)
- Potential social & economic constraints (Source: Technical Paper - Social & Economic)
- Potential ecological constraints (Source: Technical Paper - Ecology)
- Urban conservation area (Source: Grafton LEP 1988)
- Corridor 3 (downstream of the existing bridge)

Constraints outside of shown Corridor are faded.

Preliminary Constraints for Corridor 3

ARUP

Transport Roads & Maritime Services

SCALE @ A3
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Meters
0 100 200 400

Projected Coordinate System:
GDA 1994, MGA Zone 56

Data Source: ARUP 2011

Date Created: 19/12/2011

GRAFTON
ALUMY CREEK
ALIPOU CREEK
CLARENCE RIVER
SWAN CREEK
ELIZABETH ISLAND
TURF STREET
SUMMERLAND WAY
QUEEN STREET
LAWRENCE ROAD
BENT STREET
PRINCE STREET
DOBIE STREET
PACIFIC HIGHWAY
North Street
Duke Street
Villiers Street
Woodward Street
Clarence Street
Fry Street
Bacon Street
Bromley Street
Oliver Street
Kent Street
Waratah Place
Breimba Street
McHugh Street
Miller Street
Mark Close
Powell Street
Chapman Street
Kiah Place
Hoof Street
Prince Street
Arthur Street
Crown Street
Bowtell Avenue
Loxton Avenue
Alice Street
Mary Street
Iven Street
Carr Street
Butterfactory Lane
Great Marlow Road
Kirchner Street
Meona Lane
Eggins Lane
Wants Lane
Perseverance Lane
Greens Lane
McClaers Lane
Fitzroy Street
Victoria Street
Pound Street
Queen Street
Bawden Street
Ryan Lane
Spring Street
Wharf Street
Through Lane
Bligh Street
Through Street
Riverside Drive
Crisp Avenue
Bridge Lane
Iolanthe Street
14
20
21
M

LEGEND

- Preliminary route option centrelines
- Major roads
- Minor roads
- Streams/Creeks
- Rail
- 132kV Power
- Flood levees (Source: Survey, A Fletcher and Associates, 2008)
- Flooding extents - 1:20 year ARI event (Source: Lower Clarence River Flood Study Review Final Report, March 2004)
- Commonwealth, National, State and Regional heritage items (Sources: State Heritage Register, Section 170 Register of the Heritage Act 1977, North Coast REP 1988, National Shipwrecks Database, Commonwealth Heritage List, Register of the National Estate, National Trust Register)
- LEP heritage items (Source: Grafton LEP1988)
- High Aboriginal archaeological potential (Source: Technical Paper - Aboriginal)
- Known Aboriginal cultural values/places (Clarence River not shown for clarity) (Source: Technical Paper - Aboriginal)
- Non-Aboriginal archaeological sensitive areas (Source: Technical Paper - Non-Aboriginal)
- Potential social & economic constraints (Source: Technical Paper - Social & Economic)
- Potential ecological constraints (Source: Technical Paper - Ecology)
- Urban conservation area (Source: Grafton LEP 1988)
- Corridor 4 (Pacific Highway - North Street connections)

Constraints outside of shown Corridor are faded

Preliminary Constraints for Corridor 4

ARUP

Transport Roads & Maritime Services

SCALE @ A3 1:15,000

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Meters 0 100 200 400

Projected Coordinate System: GDA 1994, MGA Zone 56

Data Source: ARUP 2011

Date Created: 19/12/2011

SOUTH GRAFTON

GRAFTON

ARMIDALE ROAD

BENT STREET

GWYDIR HIGHWAY

PACIFIC HIGHWAY

PRINCE STREET

DOBIE STREET

TURF STREET

SUMMERLAND WAY

QUEEN STREET

LAWRENCE ROAD

CLARENCE RIVER

ALUMY CREEK

WASHPEN CREEK

ELIZABETH ISLAND

Centenary Drive

Washpool Road

Swan Lane

Ridge Street
Skinner Street
Vere Street
Bligh Street
Kelly Street
Hunter Lane
Iolanthe Street
McClares Lane
Victoria Street
Fitzroy Street
King Street
Queen Street
Pound Street
Bacon Street
Villiers Street
Fry Street
Mary Street
Alice Street
Bowtell Avenue
Hoof Street
Oliver Street
Duke Street
Prince Street
Arthur Street
Crown Street
North Street
Course Street
Banksia Street
Carr Street
Rebecca Lane
Matthew Lane
Trenayr
Bromley Street
Kent Street
Wellby Avenue
Clarence Street
Waratah Place
Powell Street
Chapman Street
Breimba Street
McHugh Street
Miller Street
Mark Close
Kiah Place
Kirchner Street
Butterfactory Lane
Great Marlow Road
Meona Lane
Eggins Lane
Perseverance Lane
Wants Lane
Greens Lane
SWAN CREEK

15
23
25
26
15,25

LEGEND

- Preliminary route option centrelines
- Major roads
- Minor roads
- Streams/Creeks
- Rail
- 66kV Power
- 132kV Power
- Flood levees (Source: Survey, A Fletcher and Associates, 2006)
- Flooding extents - 1:20 year ARI event (Source: Lower Clarence River Flood Study Review Final Report, March 2004)
- Commonwealth, National, State and Regional heritage items (Sources: State Heritage Register, Section 170 Register of the Heritage Act 1977, North Coast REP 1988, National Shipwrecks Database, Commonwealth Heritage List, Register of the National Estate, National Trust Register)
- LEP heritage items (Source: Grafton LEP1988)
- High Aboriginal archaeological potential (Source: Technical Paper - Aboriginal)
- Known Aboriginal cultural values/places (Clarence River not shown for clarity) (Source: Technical Paper - Aboriginal)
- Non-Aboriginal archaeological sensitive areas (Source: Technical Paper - Non-Aboriginal)
- Proposed future urban residential area (Source: Mid North Coast Regional Strategy, DP&I 2009)
- Potential social & economic constraints (Source: Technical Paper - Social & Economic)
- Potential ecological constraints (Source: Technical Paper - Ecology)
- Urban conservation area (Source: Grafton LEP 1988)
- Corridor 5 (Summerland Way - Pacific Highway connections, North Street)

Constraints outside of shown Corridor are faded

Preliminary Constraints for Corridor 5

ARUP

NSW GOVERNMENT Transport Roads & Maritime Services

SCALE @ A3
1:20,000

N

Projected Coordinate System:
GDA 1994, MGA Zone 56

Meters
0 100 200 400

Data Source: ARUP 2011

Date Created: 19/12/2011

Appendix 6 – Community and stakeholder evaluation workshop

ADDITIONAL CROSSING OF THE CLARENCE RIVER AT GRAFTON

Community and stakeholder evaluation workshop

25 & 26 NOVEMBER 2011

1. Introduction

This report provides a summary of the outcomes of the community and stakeholder evaluation workshop that was held on 25 and 26 November 2011 at the Grafton Community Centre.

The purpose of the two day workshop was for the community participants and stakeholder representatives to gain a shared understanding of which options within each corridor were considered to provide the best balance across social, environmental, economic, engineering and cost issues.

Anticipated outcomes for the workshop were to:

- Agree on the 'best' option or options within each of the five corridors.
- Identify and record any issues or comments.

Community members were invited to nominate to participate in the workshop by completing a nomination form included in the October 2011 Community Update. Those who nominated were required to attend a briefing session on Tuesday 15 November and were required to be either:

1. A property owner, residential or business owner/tenant from the following areas:
    - South Grafton (1 participant)
    - Clarenza (1 participant)
    - Central Grafton north east of Dobie St (2 participants)
    - Central Grafton south west of Dobie St (2 participants)
    - Junction Hill (1 participant); or
2. A regular bridge user (1 participant) and a river user (1 participant).

At the close of the briefing session on Tuesday 15 November, those community members who nominated to participate in the workshop were requested to break up into groups based on their area or type of nomination (as described above), and self-select participants for the workshop. A reserve was also identified in case the selected participant was unable to attend the workshop.

Where nominees could not self-select a participant or participants from their group, names of those people wishing to participate in the workshop were placed into a box and a name or names was randomly selected by the briefing facilitator. No nominations were received from Clarenza.

An information pack that included the *Preliminary Route Options Report – Parts 1 and 2* (October 2011) was provided to the selected participants at the briefing.

Stakeholder representatives from the following organisations were also invited to participate:

- Clarence Valley Council (2 representatives)
- Department of Planning and Infrastructure (1 representative)
- Grafton Chamber of Commerce and Industry (1 representative)
- Grafton-Ngerrie Local Aboriginal Land Council (1 representative)
- Freight transport industry (1 representative)

- Public transport industry (1 representative)
- Local Emergency Management Committee (1 representative)
- Clarence Environment Centre (1 representative)
- Summerland Way Promotional Committee (1 representative).

Representatives from the Local Emergency Management Committee, the Clarence Environment Centre and the Summerland Way Promotional Committee were not available to attend the workshop.

Following the community participant selection process and invitations to stakeholder representatives, a total of 8 community participants and 7 stakeholder representatives were able to attend and participate in the workshop. A list of participants is included in the workshop presentation in Attachment A.

The workshop was facilitated by Denise Wilson from ID Planning Pty Ltd. Roads and Maritime Services (RMS) and Arup project team members provided background information, technical advice and support to the workshop participants. Robert (Bob) Higgins (RMS Project Director) was an observer at the workshop.

The group worked through the indicator results in the *Preliminary Route Options Report – Parts 1 and 2* to understand how the 25 preliminary options performed against the project objectives and supporting objectives within each of the five corridors. Options in each corridor were scored and ranked against the project objectives. The process undertaken is discussed further below and included in the workshop presentation in Attachment A.

This workshop is one of the inputs into the selection of the short list of options to go forward for further investigation. Technical investigations undertaken to date, community comment and the outcomes of the evaluation workshop will help identify the best option(s) within each of the five corridors. These options will be called the short-list of route options.

2. Evaluation workshop and process undertaken to evaluate the 25 preliminary options in the 5 strategic corridors

The workshop was led by facilitator Denise Wilson. Members of the project team provided technical advice on the project objectives and indicators used for the workshop and support for the workshop participants.

The 5 step process used to rank options within each corridor is listed below:

- Step 1 - Review the results for each indicator.
- Step 2 - For each supporting objective, score each option out of 10, where:
    - The best option in the corridor is scored 10, and
    - The other options in the corridor are scored relative to the best option.

- Step 3 - For each project objective, consider the scores for all the supporting objectives, then rank the options in that corridor.

- Step 4 - For each corridor, review the rankings for the project objectives and agree (by consensus) on final option rankings.

- Step 5 - Review final option rankings and agree on the best option(s) in that corridor.

Evaluation was performed on a corridor by corridor basis. For each corridor, only the options within that corridor were discussed and evaluated. The order of corridors evaluated was based on the number of options in each corridor and the time allocations for the two days and agreed by the workshop participants. On day 1 (Friday 25 November), corridors 1, 4 and 5 were evaluated. On day 2 (Saturday 26 November), corridors 2 and 3 were evaluated. Refer to Attachment A for further details on the evaluation process.

Prior to evaluation of the first corridor on day 1, a summary of issues raised by the community in response to the release of the *Preliminary Route Options Report – Parts 1 and 2* was provided.

During the workshop, participants held discussions about the indicator results and their own knowledge, experience and the area. The group ranked the options within each of the five corridors and individual comments were noted.

3. Outcomes of workshop

Options identified by the group as best performing within each corridor and recommended by the group to go forward for further consideration were:

- Corridor 1 – Option E (Cowan Street, South Grafton to Villiers Street, Grafton).

- Corridor 2 – Option A (New bridge parallel to and immediately upstream of the existing bridge connecting Bent Street, South Grafton and Fitzroy Street, Grafton).

- Corridor 3 – Option 11 (Existing Pacific Highway north of South Grafton to Fry Street, Grafton).

- Corridor 4 – Option 14 (Existing Pacific Highway north of South Grafton to North Street Grafton via Kirchner Street).

- Corridor 5 – Option 15 (Existing Pacific Highway north of South Grafton to Summerland Way north of Grafton, via Kirchner Street).

A full list of option rankings for each corridor is included in Attachment B. This also includes comments and issues raised during the evaluation process concerning options within that corridor.

Other more general issues raised during the workshop were also recorded and will be considered by the project team as part of the selection of the short-list of route options.

At the end of the workshop (following completion of the evaluation process), participants were provided the opportunity to discuss potential improvements to the options that were selected in the workshop. These issues and potential improvements are included in Attachment C.

4. Next steps

The outcomes of the evaluation workshop as well as wider community comment and the technical investigations will help identify the short list of options to go forward for further engineering and environmental investigations.

Following an announcement on the short list of options, further engineering and environmental technical investigations will be undertaken to provide more detailed information on the relative performance of the options.

Community comments will be considered at this time and, together with the investigations undertaken and the outcomes of the Value Management Workshop will input into a decision on a recommended preferred option.

Community involvement will continue throughout the process for selecting the recommended preferred location for an additional crossing.

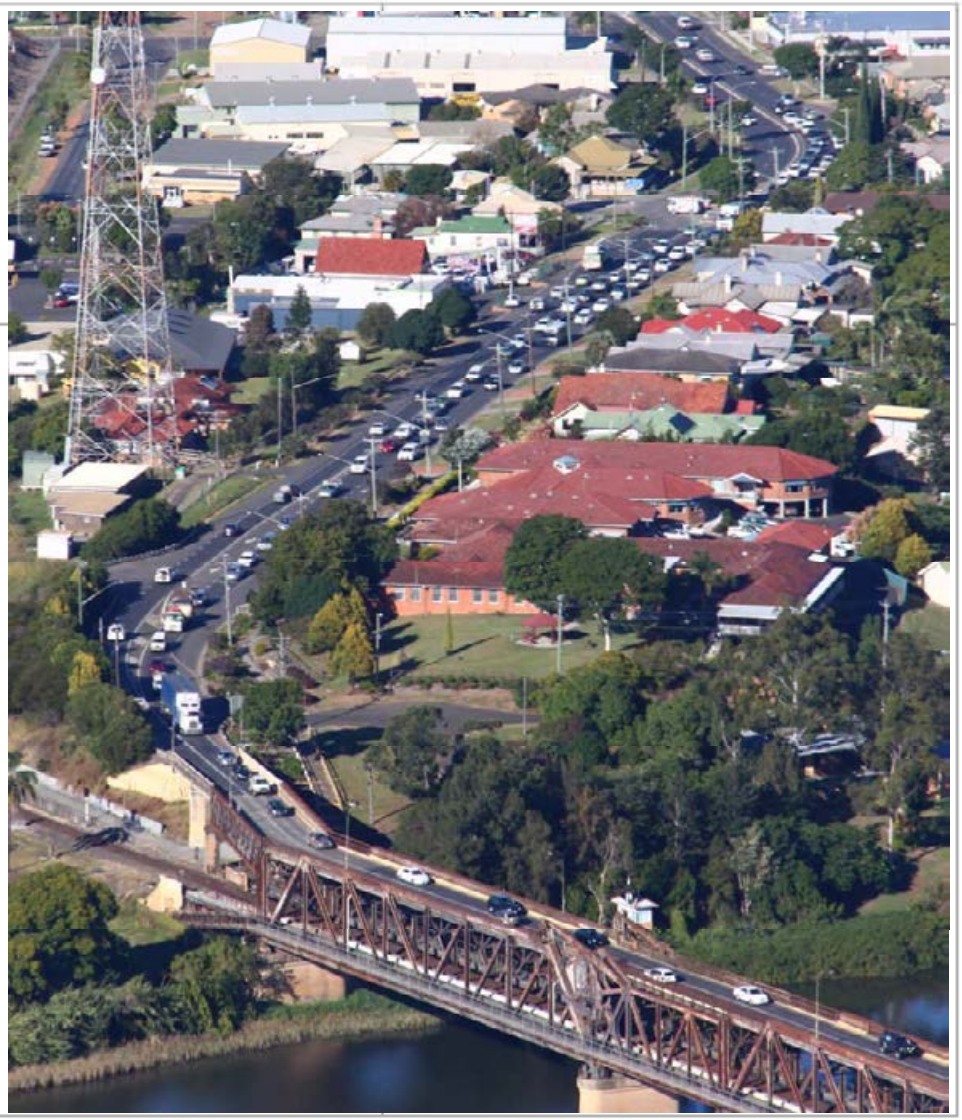
ATTACHMENT A

Community and stakeholder evaluation workshop presentation

Additional crossing of the Clarence River at Grafton

Transport Roads & Maritime Services
NSW GOVERNMENT

Community and stakeholder evaluation workshop



Grafton Community Centre

- 9am-4pm Friday 25 November 2011
- 9am-3pm Saturday 26 November 2011

Welcome and introduction

- Welcome by Bob Higgins (BH)
- Where are we now? (BH)
- Short-listing process (BH)
- Purpose of this workshop (BH)

Welcome and introduction

- Administration (DW)
- Agenda and breaks (DW)
- Pre-reading and workshop materials (DW)
- Role of project team and facilitator (DW)

Community participants and stakeholder representatives

- Community participants (DW)
  - Susan Hillery
  - Matthew Pope
  - David Graham
  - Richard Green
  - Greg Hayes
  - Kim Dahl
  - Neil Jameson
  - Jayne Miller

  - No nominations were received from Clarenza

Community participants and stakeholder representatives

- Stakeholder representatives (DW)
  - David Morrison (Clarence Valley Council)
  - Tim Jenkins (Clarence Valley Council)
  - Jenny Johnson (Dept of Planning and Infrastructure)
  - Phil Belletty (Grafton Chamber of Commerce and Industry)
  - Brett Duroux (Grafton-Ngerrie LALC)
  - Robert Blanchard (freight transport industry)
  - Chris Webb (public transport industry)

- Representatives from the Local Emergency Management Committee and the Clarence Environment Centre were not available to attend
- A representative from the Summerland Way Promotional Committee declined the invitation to attend

Community involvement and feedback

- Information and feedback sessions (DW)

- Community feedback received on the Preliminary Route Options Report – Parts 1&2 (DW)

Workshop objectives and anticipated outcomes

- Workshop objectives (CC)
  - Gain a shared understanding of which options provide the best balance across social, environmental, economic, engineering and cost issues

- Anticipated outcomes (CC)
  - Identify the “best” option or options within each of the five corridors
  - Identify and record any issues or comments

Project purpose

The project purpose is to identify an additional crossing of the Clarence River at Grafton to address short-term and long-term transport needs.

Project objectives

- Enhance road safety for all road users over the length of the project
- Improve traffic efficiency between and within Grafton and South Grafton
- Provide value for money
- Minimise impact on the environment
- Support regional and local economic development
- Involve all stakeholders and consider their interests
  - Not used for assessment – considered a process objective and includes community involvement

Supporting objectives and indicators

- The Supporting Objectives provide more detail on the project objectives

- The Indicators provide an indication of how each option performs in achieving the objectives of the project

Process to rank options within each corridor

5 step process to rank options within each corridor (CC):

- Step 1 - Review the results for each indicator.
- Step 2 - For each supporting objective, score each option out of 10, where:
  - 10 is awarded to the best option in the corridor, and
  - The other options are scored relative to the best option.

Scoring of options

Performance compared to other options in the corridor	Suggested score
Best option within a corridor:	10 / 10
Performs marginally worse than the best option in that corridor:	9 / 10
Performs a little/somewhat worse than the best option:	7–8 / 10
Performs substantially worse than the best option:	5 / 10
Performs very poorly compared to the best option:	2–3 / 10
Performs extremely poorly compared to the best option:	0 / 10

Process to rank options within each corridor

- Step 3 - For each project objective, consider the scores for all the supporting objectives, then rank the options in that corridor.

- Step 4 - For each corridor, review the rankings for the project objectives and agree (where possible) on final option rankings.

- Step 5 - Review final option rankings and agree on the best option(s) in that corridor.

SUPPORTING OBJECTIVE	INDICATORS Indicator	CORRIDOR XX Option X	Option Y	Option Z	Comments
PROJECT OBJECTIVE 1					
Supporting objective 1	Indicator 1	10	5	7	
	Indicator 2	43	28	55	
	Indicator 3	2	7	3	
	SCORE for supporting objective 1				
Supporting objective 2	Indicator 4	1	1	1	
	Indicator 5	3	4	8	
	SCORE for supporting objective 2				
RANK FOR PROJECT OBJECTIVE 1					
RANK FOR PROJECT OBJECTIVE 2					
RANK FOR PROJECT OBJECTIVE 3					
RANK FOR PROJECT OBJECTIVE 4					
RANK FOR PROJECT OBJECTIVE 5					
OVERALL RANK FOR CORRIDOR XX					

Step 1 - Review the results for each indicator

Comments recorded

SUPPORTING OBJECTIVE	INDICATORS Indicator	CORRIDOR XX Option X	Option Y	Option Z	Comments
PROJECT OBJECTIVE 1					
Supporting objective 1	Indicator 1	10	5	7	
	Indicator 2	43	28	55	
	Indicator 3	2	7	3	
	SCORE for supporting objective 1	A	B	C	
Supporting objective 2	Indicator 4	1	1	1	
	Indicator 5	3	4	8	
	SCORE for supporting objective 2				
RANK FOR PROJECT OBJECTIVE 1					
RANK FOR PROJECT OBJECTIVE 2					
RANK FOR PROJECT OBJECTIVE 3					
RANK FOR PROJECT OBJECTIVE 4					
RANK FOR PROJECT OBJECTIVE 5					
OVERALL RANK FOR CORRIDOR XX					

Step 2 – For each supporting objective, score each option out of 10

Comments recorded

SUPPORTING OBJECTIVE	INDICATORS	CORRIDOR XX			
	Indicator	Option X	Option Y	Option Z	Comments
PROJECT OBJECTIVE 1					
Supporting objective 1	Indicator 1	10	5		
	Indicator 2	43	28		
	Indicator 3	2	7		
	SCORE for supporting objective 1	**A**	**B**	**C**	
Supporting objective 2	Indicator 4	1	1		
	Indicator 5	3	4	8	
	SCORE for supporting objective 2	**E**	**F**	**G**	
RANK FOR PROJECT OBJECTIVE 1		2	3	1	
RANK FOR PROJECT OBJECTIVE 2					
RANK FOR PROJECT OBJECTIVE 3					
RANK FOR PROJECT OBJECTIVE 4					
RANK FOR PROJECT OBJECTIVE 5					
OVERALL RANK FOR CORRIDOR XX					

Step 3 – For each project objective, rank the options in that corridor

Comments recorded

SUPPORTING OBJECTIVE	INDICATORS	CORRIDOR XX			
	Indicator	Option X	Option Y	Option Z	Comments
PROJECT OBJECTIVE 1					
Supporting objective 1	Indicator 1	10	5	7	
	Indicator 2	43	28	55	
	Indicator 3	2	7	3	
	SCORE for supporting objective 1	**A**	**B**	**C**	
Supporting objective 2	Indicator 4	1	1	1	
	Indicator 5	3	4	8	
	SCORE for supporting objective 2	**E**	**F**	**G**	
	RANK FOR PROJECT OBJECTIVE 1	**2**	**3**	**1**	
	RANK FOR PROJECT OBJECTIVE 2	**1**	**2**	**3**	
	RANK FOR PROJECT OBJECTIVE 3	**2**	**3**	**1**	
	RANK FOR PROJECT OBJECTIVE 4	**3**	**1**	**2**	
	RANK FOR PROJECT OBJECTIVE 5	**1**	**2**	**3**	
OVERALL RANK FOR CORRIDOR XX		**1**	**2**	**3**	

Step 4 – For each corridor, review the rankings for the project objectives and agree on final option rankings

Comments recorded

SUPPORTING OBJECTIVE	INDICATORS	CORRIDOR XX			
	Indicator	Option X	Option Y	Option Z	Comments
PROJECT OBJECTIVE 1					
Supporting objective 1	Indicator 1	10	5	7	
	Indicator 2	43	28	55	
	Indicator 3	2	7	3	
	SCORE for supporting objective 1	**A**	**B**	**C**	
Supporting objective 2	Indicator 4	1	1	1	
	Indicator 5	3	4	8	
	SCORE for supporting objective 2	**E**	**F**	**G**	
	RANK FOR PROJECT OBJECTIVE 1	**2**	**3**	**1**	
	RANK FOR PROJECT OBJECTIVE 2	**1**	**2**	**3**	
	RANK FOR PROJECT OBJECTIVE 3	**2**	**3**	**1**	
	RANK FOR PROJECT OBJECTIVE 4	**3**	**1**	**2**	
	RANK FOR PROJECT OBJECTIVE 5	**1**	**2**	**3**	
OVERALL RANK FOR CORRIDOR XX		**1**	**2**	**3**	**Comments recorded**

Step 5 – Review final option rankings and agree on the best option(s) in that corridor

Issues and constraints for each corridor

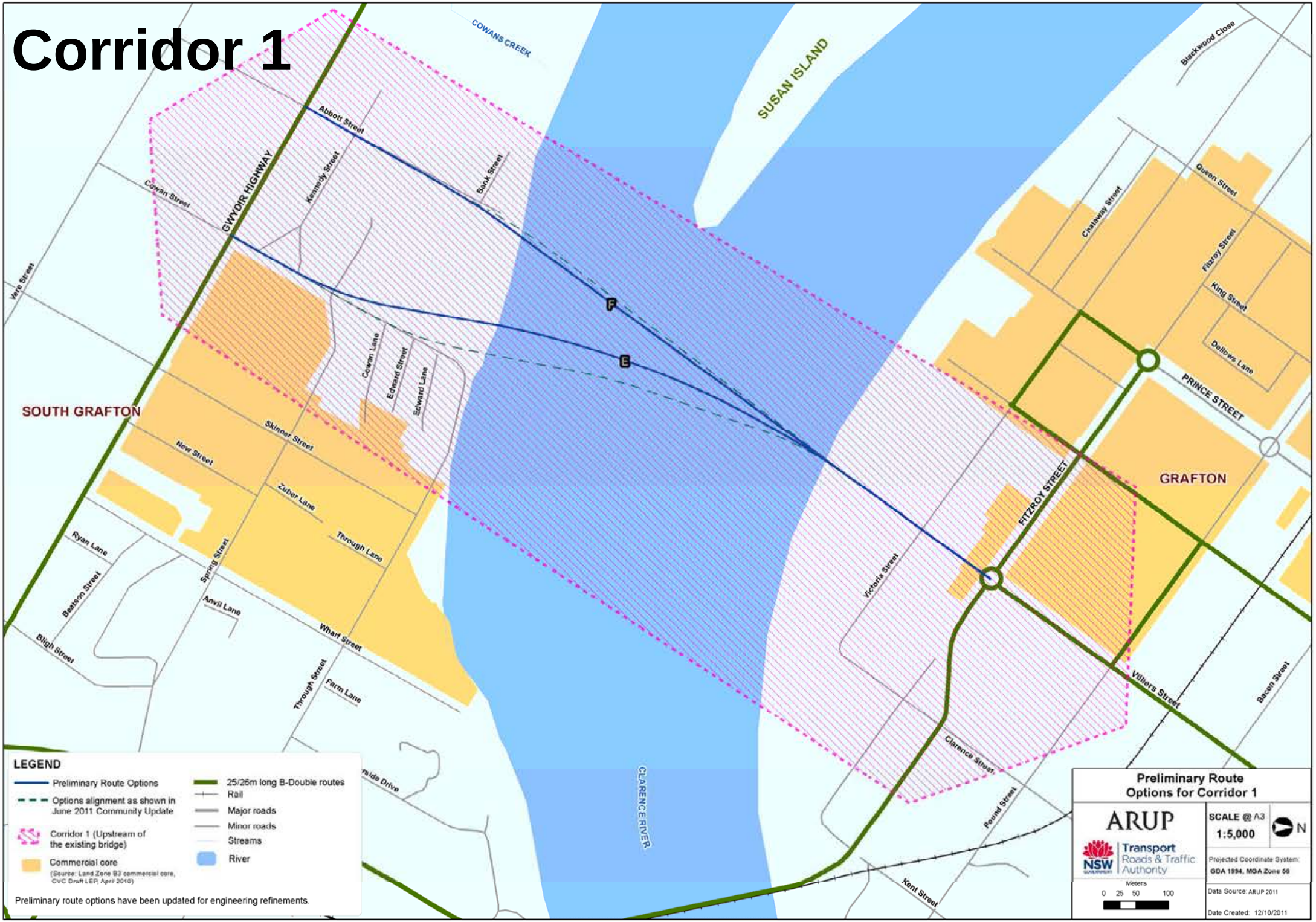
- Environment (CC):
  - Residential amenity
  - Heritage:
    - Aboriginal
    - Non-Aboriginal heritage
  - Natural environment (native plants and animals)
  - Aesthetics
  - Flooding
  - Social environment

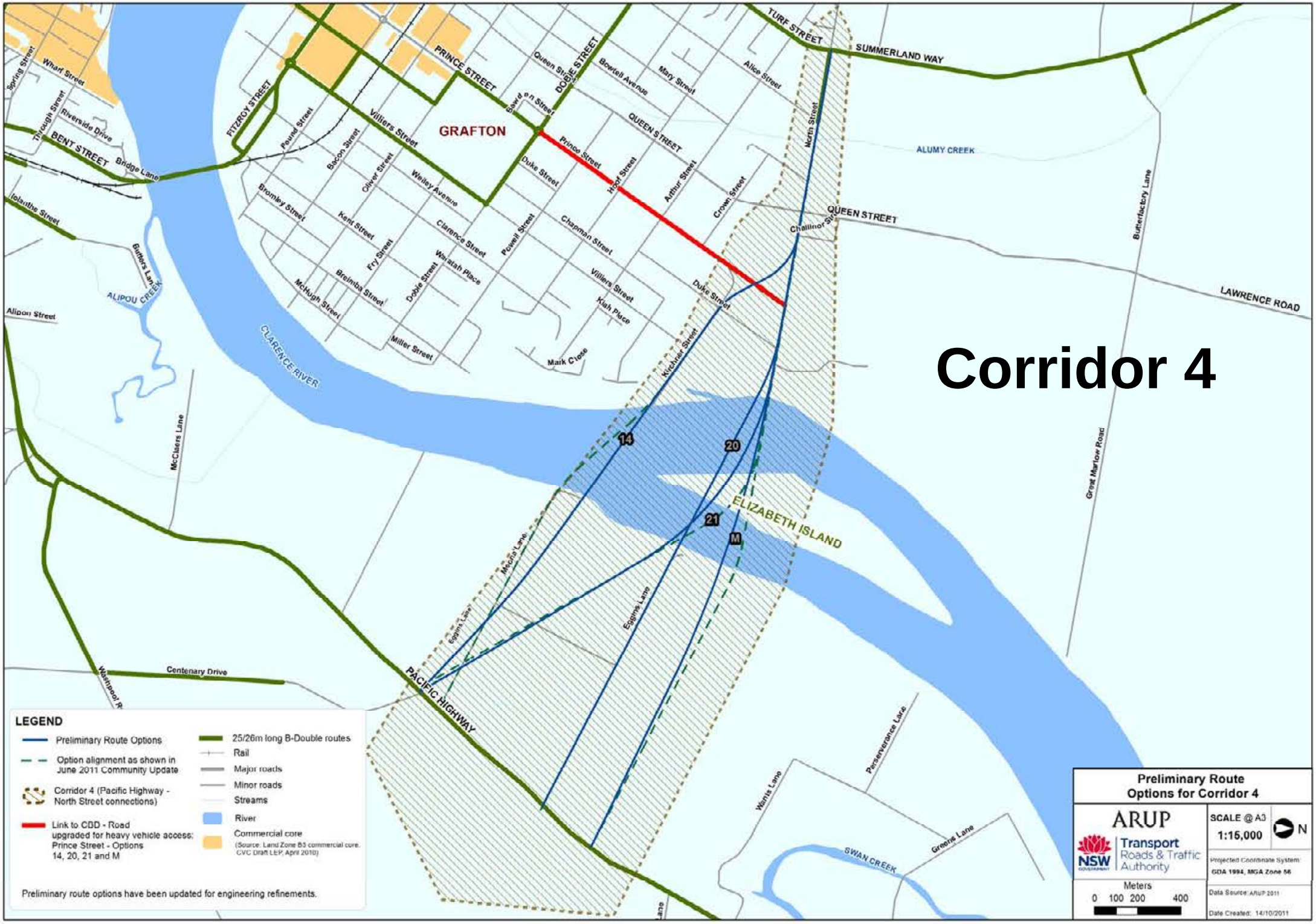
Issues and constraints for each corridor

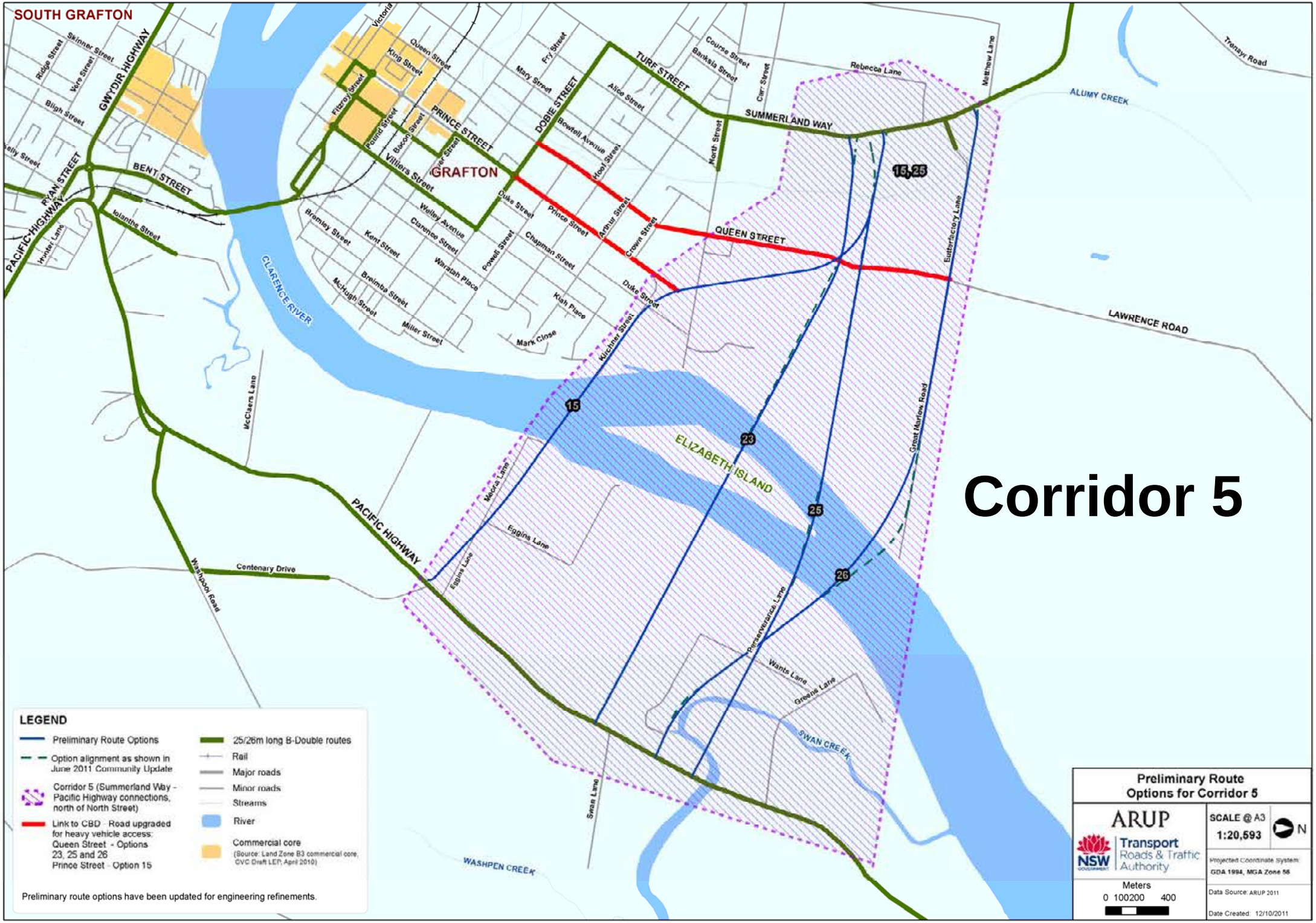
- Road safety
- Traffic and transport efficiency
- Regional and local economic development
- Value for money

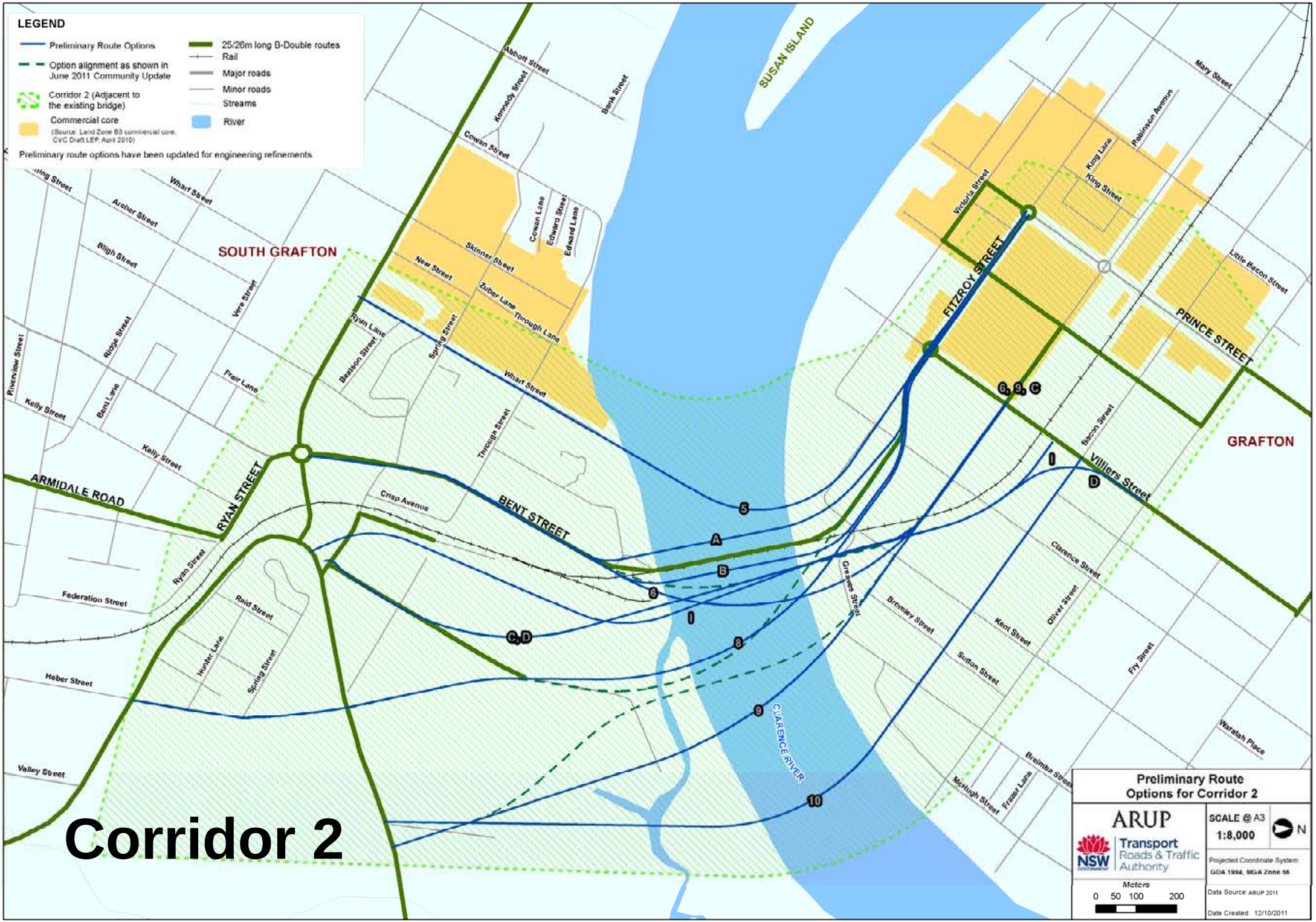
- More detail to follow during evaluation process

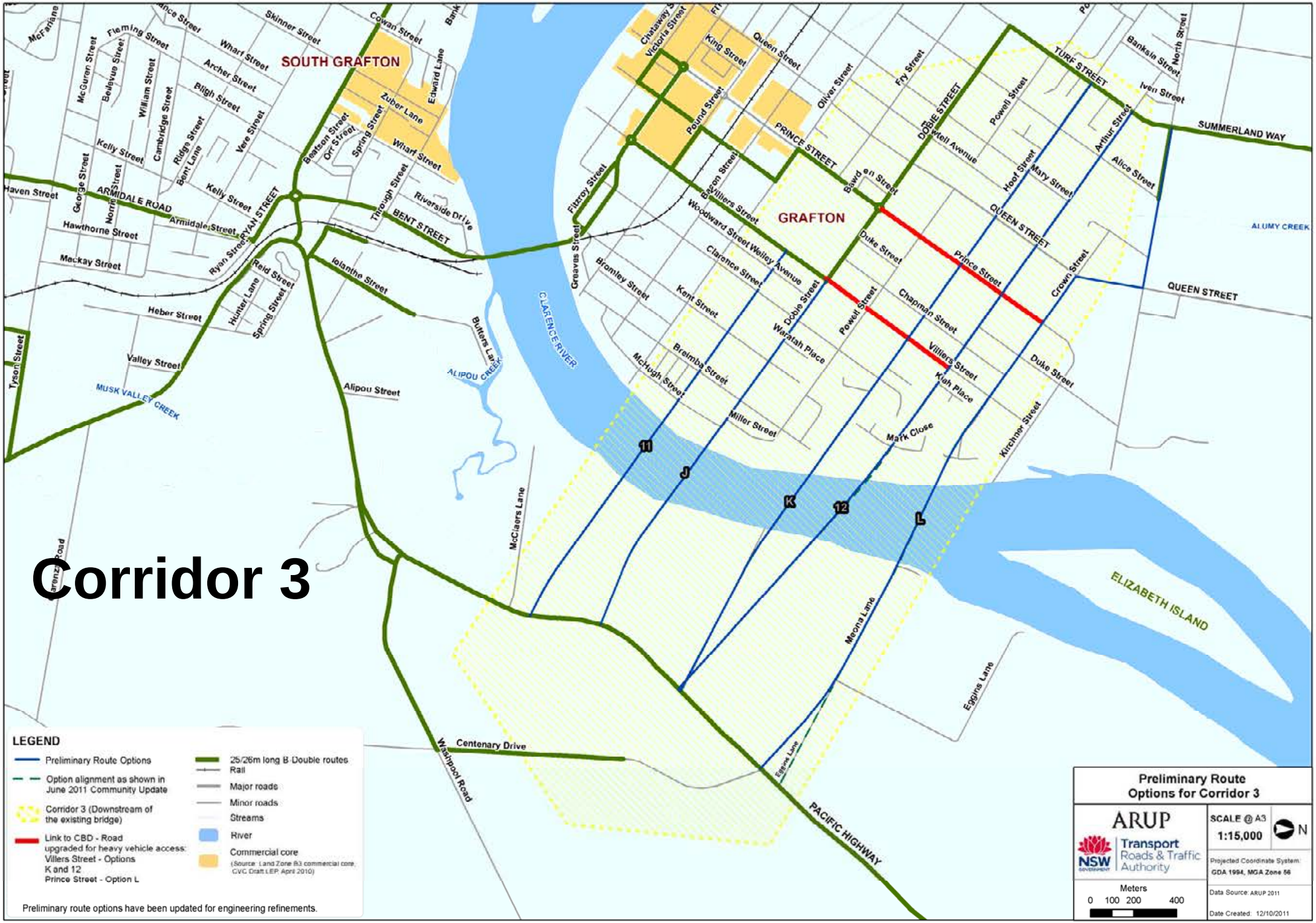
Evaluation of options


Corridor 1
COWANS CREEK
SUSAN ISLAND
Blackwood Close
Abbott Street
GWYDIR HIGHWAY
Kennedy Street
Bank Street
Cowan Street
Vere Street
Queen Street
Crataway Street
Fitzroy Street
King Street
Dellows Lane
PRINCE STREET
F
E
Cowan Lane
Edward Street
Edward Lane
SOUTH GRAFTON
Skinner Street
New Street
Zubar Lane
Through Lane
GRAFTON
FITZROY STREET
Victoria Street
Ryan Lane
Spring Street
Beaseys Street
Anvil Lane
Wharf Street
Bligh Street
Through Street
Farm Lane
Villiers Street
Bacon Street
Clarence Street
CLARENCE RIVER
Pound Street
Kent Street
LEGEND
Preliminary Route Options
Options alignment as shown in June 2011 Community Update
Corridor 1 (Upstream of the existing bridge)
Commercial core
(Source: Land Zone B3 commercial core, CVC Draft LEP, April 2010)
25/26m long B-Double routes
Rail
Major roads
Minor roads
Streams
River
Preliminary route options have been updated for engineering refinements.
Preliminary Route Options for Corridor 1
ARUP
Transport Roads & Traffic Authority
SCALE @ A3
1:5,000
N
Meters
0 25 50 100
Projected Coordinate System: GDA 1994, MGA Zone 56
Data Source: ARUP 2011
Date Created: 12/10/2011


Corridor 4
GRAFTON
CLARENCE RIVER
ALIPOU CREEK
ALUMY CREEK
SWAN CREEK
ELIZABETH ISLAND
PACIFIC HIGHWAY
PRINCE STREET
QUEEN STREET
BENT STREET
TURF STREET
SUMMERLAND WAY
LAWRENCE ROAD
Great Marlow Road
Butterfactory Lane
McClaers Lane
Centenary Drive
Eggins Lane
Media Lane
Wards Lane
Greens Lane
Perseverance Lane
Kirchner Street
Duke Street
Prince Street
Villiers Street
Fitzroy Street
Bacon Street
Oliver Street
Wesley Avenue
Brombry Street
Kent Street
Fry Street
Clarence Street
Powell Street
Chapman Street
Arthur Street
Crown Street
North Street
Mary Street
Alice Street
Bowtell Avenue
Queen Street
Dobie Street
Pound Street
Wharf Street
Riverside Drive
Bridge Lane
Iolanthe Street
Alipou Street
Mark Close
Miller Street
McHugh Street
Breimba Street
Doble Street
Warratah Place
Kiah Place
Chaillinor Street
14
20
21
M
LEGEND
Preliminary Route Options
Option alignment as shown in June 2011 Community Update
Corridor 4 (Pacific Highway - North Street connections)
Link to CBD - Road upgraded for heavy vehicle access: Prince Street - Options 14, 20, 21 and M
25/26m long B-Double routes
Rail
Major roads
Minor roads
Streams
River
Commercial core
(Source: Land Zone B3 commercial core, CVC Draft LEP, April 2010)
Preliminary route options have been updated for engineering refinements.
Preliminary Route Options for Corridor 4
ARUP
Transport Roads & Traffic Authority
NSW GOVERNMENT
SCALE @ A3
1:15,000
N
Meters
0 100 200 400
Projected Coordinate System: GDA 1994, MGA Zone 56
Data Source: ARUP 2011
Date Created: 14/10/2011


SOUTH GRAFTON
GRAFTON
GWYDIR HIGHWAY
PACIFIC HIGHWAY
RYAN STREET
BENT STREET
Skinner Street
Ridge Street
Vere Street
Bligh Street
Victoria
Queen Street
King Street
Fitzroy Street
Pound Street
Bacon Street
PRINCE STREET
Villiers Street
Mary Street
Fry Street
DOBIE STREET
TURF STREET
Course Street
Banksia Street
Carr Street
Rebecca Lane
Matthew Lane
Trenayr Road
ALUMY CREEK
SUMMERLAND WAY
North Street
Alice Street
Bowtell Avenue
Hoof Street
Duke Street
Prince Street
Arthur Street
Crown Street
QUEEN STREET
Butterfactory Lane
LAWRENCE ROAD
Kirchner Street
Wellley Avenue
Clarence Street
Kent Street
Bromley Street
Waratah Place
Powell Street
Chapman Street
Kish Place
Mark Close
McHugh Street
Breimba Street
Miller Street
Iolanthe Street
Hunter Lane
CLARENCE RIVER
McClares Lane
ELIZABETH ISLAND
Great Marlow Road
Mecca Lane
Eggins Lane
Centenary Drive
Washpool Road
Perseverance Lane
Wants Lane
Greene Lane
SWAN CREEK
Swan Lane
WASHPEN CREEK
15
23
25
26
15,25
Corridor 5
LEGEND
Preliminary Route Options
Option alignment as shown in June 2011 Community Update
Corridor 5 (Summerland Way - Pacific Highway connections, north of North Street)
Link to CBD - Road upgraded for heavy vehicle access: Queen Street - Options 23, 25 and 26 Prince Street - Option 15
25/26m long B-Double routes
Rail
Major roads
Minor roads
Streams
River
Commercial core
(Source: Land Zone B3 commercial core, CVC Draft LEP, April 2010)
Preliminary route options have been updated for engineering refinements.
Preliminary Route Options for Corridor 5
ARUP
Transport Roads & Traffic Authority
NSW GOVERNMENT
SCALE @ A3
1:20,593
N
Meters
0 100200 400
Projected Coordinate System: GDA 1994, MGA Zone 56
Data Source: ARUP 2011
Date Created: 12/10/2011


LEGEND
Preliminary Route Options
Option alignment as shown in June 2011 Community Update
Corridor 2 (Adjacent to the existing bridge)
Commercial core
(Source: Land Zone B3 commercial core, CVC Draft LEP April 2010)
25/26m long B-Double routes
Rail
Major roads
Minor roads
Streams
River
Preliminary route options have been updated for engineering refinements.
SOUTH GRAFTON
GRAFTON
SUSAN ISLAND
CLARENCE RIVER
ARMIDALE ROAD
RYAN STREET
BENT STREET
FITZROY STREET
PRINCE STREET
Villiers Street
Abbott Street
Kennedy Street
Bank Street
Cowan Street
Cowan Lane
Edward Street
Edward Lane
Skinner Street
New Street
Zuber Lane
Through Lane
Wharf Street
Archer Street
Bligh Street
Vere Street
Ridge Street
Riverview Street
Kelly Street
Bent Lane
Frair Lane
Ryan Lane
Beaton Street
Spring Street
Through Street
Crisp Avenue
Ryan Street
Federation Street
Reid Street
Hunter Lane
Spring Street
Heber Street
Valley Street
Victoria Street
King Lane
King Street
Robinson Avenue
Mary Street
Little Bacon Street
Bacon Street
Clarence Street
Oliver Street
Greaves Street
Bromley Street
Kent Street
Sutton Street
Fry Street
Waratah Place
Breimba Street
McHugh Street
Fraser Lane
5
A
B
6
I
C,D
8
9
10
6, 9, C
I
D
Corridor 2
Preliminary Route Options for Corridor 2
ARUP
Transport Roads & Traffic Authority
NSW
SCALE @ A3
1:8,000
N
Projected Coordinate System: GDA 1994, MGA Zone 56
Meters
0 50 100 200
Data Source: ARUP 2011
Date Created: 12/10/2011


Corridor 3
SOUTH GRAFTON
GRAFTON
CLARENCE RIVER
ALIPOU CREEK
MUSK VALLEY CREEK
ALUMY CREEK
ELIZABETH ISLAND
ARMIDALE ROAD
BENT STREET
RYAN STREET
PRINCE STREET
QUEEN STREET
SUMMERLAND WAY
TURF STREET
DOBIE STREET
Centenary Drive
Washpool Road
PACIFIC HIGHWAY
Alipou Street
Iolanthe Street
Valley Street
Heber Street
Mackay Street
Hawthorne Street
Armidale Street
Kelly Street
Haven Street
Tyson Street
Skinner Street
Cowan Street
Fleming Street
Wharf Street
Archer Street
Bligh Street
Vere Street
Ridge Street
Bent Lane
Cambridge Street
William Street
Bellevue Street
McGuren Street
McFarlane
Beatson Street
Orr Street
Spring Street
Zuber Lane
Edward Lane
Wharf Street
Through Street
Riverside Drive
Reid Street
Hunter Lane
Spring Street
Butters Lane
McClaers Lane
Greaves Street
Fitzroy Street
Victoria Street
Chatsway Street
King Street
Queen Street
Pound Street
Oliver Street
Fry Street
Bacon Street
Villiers Street
Woodward Street
Wellington Street
Bromley Street
Clarence Street
Kent Street
Brelmba Street
McHugh Street
Miller Street
Waratah Place
Powell Street
Chapman Street
Crown Street
Duke Street
Prince Street
Villiers Street
Kiah Place
Mark Close
Kirchner Street
Meons Lane
Eggins Lane
Edgeroi Lane
Howell Avenue
Hoof Street
Maty Street
Alice Street
Arthur Street
Banksia Street
North Street
Ivan Street
11
J
K
12
L
LEGEND
Preliminary Route Options
Option alignment as shown in June 2011 Community Update
Corridor 3 (Downstream of the existing bridge)
Link to CBD - Road upgraded for heavy vehicle access:
Villers Street - Options K and 12
Prince Street - Option L
25/26m long B Double routes
Rail
Major roads
Minor roads
Streams
River
Commercial core
(Source: Land Zone B3 commercial core, CVC Draft LEP April 2010)
Preliminary route options have been updated for engineering refinements.
Preliminary Route Options for Corridor 3
ARUP
Transport Roads & Traffic Authority
NSW GOVERNMENT
SCALE @ A3
1:15,000
N
Meters
0 100 200 400
Projected Coordinate System:
GDA 1994, MGA Zone 56
Data Source: ARUP 2011
Date Created: 12/10/2011

ATTACHMENT B

Results of workshop

SUPPORTING OBJECTIVE	INDICATORS		CORRIDOR 1		
	INDICATORS	UNIT	F	E	COMMENTS
PROJECT OBJECTIVE: Minimise impact on the environment					
Minimise impact on the natural environment.	Length through potential EEC	m	10	10	
	Length through other native vegetation	m	240	430	
		SCORE	10	8	EEC considered more important for scoring purposes
Minimise the impact on residential amenity, including noise, vibration, air quality etc.	Number of residential properties with a doubling of traffic at 10 years after opening (2029).	Number	7	32	
	Number of noise sensitive community facilities with a doubling of traffic at 10 years after opening (2029).	Number	1	2	
		SCORE	10	5	
	Number of residential properties with a halving of traffic at 10 years after opening (2029).	Number	86	104	A participant raised an issue about using this indicator - as it relates to impacts outside the corridor, not within the corridor.
	Number of noise sensitive community facilities with a halving of traffic at 10 years after opening	Number	7	12	
		SCORE	8	10	
Minimise the impact on heritage.	Aboriginal - is option likely to directly affect a culturally significant Aboriginal site (Yes/No)	Yes or No	No	No	No major known Aboriginal cultural constraints for Options E or F.
	Aboriginal - length through high archaeological potential area	m	350	350	
		SCORE	10	10	No differentiation between options E and F in Corridor 1 for Aboriginal heritage.
	Non-Aboriginal - number of heritage items of State Significance likely to be affected by the option	Number	0	0	
	Non-Aboriginal - number of heritage items of Local Significance likely to be affected by the option	Number	6	6	
	Non-Aboriginal - length through urban conservation area	m	2140	2110	
		SCORE	10	10	
Provide a project that fits sensitively into the built, natural and community context.	Height of new crossing compared to existing bridge (Corridor 2 only)	m above or below road deck level of existing bridge	0	0	
	Length of new bridge and viaduct	m	730	690	
	Length of new or upgraded approach road (at-grade or on embankment)	m	1008	1065	
	Geometry of the new route aligns with existing street or landscape patterns (Yes/No)	Yes or No	Yes	No	Option E considered not significantly misaligning with grid pattern.
		SCORE	9	10	Long-sections were considered in this scoring, including embankment height and lengths.
Minimise flooding impact caused by the project.	Length of bridge across river	m	730	690	Both options possibly have the same number of piers.
	Length of viaduct across floodplain and minor creek crossings on Grafton side	m	0	0	
	Length of viaduct across floodplain and minor creek crossings on South Grafton side	m	0	0	
		SCORE	9	10	There is a question around flood immunity of approach roads in 1 in 100yr flood - for both options.
Minimise the impact on the social environment, including property impacts.	Number of community facilities potentially affected	Number	5	5	The old St Mary's school on Victoria St closed.
	Number of properties (excluding community facilities) potentially affected	Number	15	8	Property acquisition considered the most important issue by the participants for this objective.
		SCORE	5	10	
RANK FOR PROJECT OBJECTIVE: Minimise impact on the environment			2	1	Property acquistion considered the most important issue by the participants for this objective. Noise impacts are also considered very important (re: residential and tourism).

PROJECT OBJECTIVE: Enhance road safety for all road users over the length of the project					
Reduce the potential for road crashes and injuries on the bridge and approaches including any intersections and connecting roads	**Number of tight horizontal curves**	**Number**	**0**	**0**	
	Number of sharp crest vertical curves	**Number**	**1**	**0**	
	Number of locations with a steep grade	**Number**	**0**	**0**	
		SCORE	**9**	**10**	
	Number of intersections where approach volumes in 2019 are very high	**Number**	**0**	**1**	
	Number of intersections where approach volumes in 2019 are moderately high	**Number**	**3**	**4**	
		SCORE	**10**	**9**	
Provide safe facilities for pedestrians and cyclists	**N/A at this stage. Assume all options provide safe pedestrian and cyclist facilities. Not a differentiating issue at this stage.**	**N/A**	**N/A**	**N/A**	
RANK FOR PROJECT OBJECTIVE: Enhance road safety for all road users over the length of the project			**1**	**2**	**Intersections considered more important for this objective**
PROJECT OBJECTIVE: Improve traffic efficiency between and within Grafton and South Grafton					
Provide efficient access for a second crossing of the Clarence River and for the State road network	**Estimated vehicle hours travelled (VHT) across whole network at assumed bridge opening in 2019**	**Vehicle-hours travelled**	**1996**	**1977**	
	Estimated vehicle hours travelled (VHT) across whole network at 20 years after opening (2039)	**Vehicle-hours travelled**	**3177**	**3168**	
Provide a traffic management network which reduces delays between Grafton and South Grafton in peak periods to an acceptable level of service for 30 years after opening.	**Estimated average travel time in minutes between Grafton and South Grafton in 2049 (minutes) during the AM peak using the existing bridge**	**Minutes**	**5**	**5**	
Provide adequate vertical clearance for heavy vehicles	**N/A. This not a differentiating issue, as it is assumed that all options can provide adequate vertical clearance for heavy vehicles. It is a design/cost issue.**	**N/A**	**N/A**	**N/A**	
Consider demand management strategies to minimise delays to local and through traffic	**N/A. This is part of overall strategy for improvement of network - to be discussed in RODR**	**N/A**	**N/A**	**N/A**	
RANK FOR PROJECT OBJECTIVE: Improve traffic efficiency between and within Grafton and South Grafton			**1**	**1**	**No significant differentiation between these options for this objective**
PROJECT OBJECTIVE: Support regional and local economic development					
Provide transport solutions that complement existing and future land uses and support development opportunities.	**Vehicle hours travelled (VHT) for heavy vehicles across the modelled network in 2049.**	**Vehicle-hours travelled**	**60**	**59**	
Provide improved opportunities for economic and tourist development for Grafton.	**N/A at this stage. Not considered to differentiate between options within a corridor.**	**N/A**	**N/A**	**N/A**	
Provide for commercial transport including B-doubles where required.	**Estimated average travel time in minutes between the Pacific Highway to the south and the Summerland Way to the north in 2049 using the new bridge.**	**Minutes**	**16**	**16**	
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.	**Does the option provide approach road flood immunity (1-in-20 year flood) under upgraded levee scenario? (Yes/No)**	**Yes or No**	**Yes**	**Yes**	
Provide navigational clearance from the additional crossing for river users.	**N/A. Design requirement, included in cost**	**N/A**	**N/A**	**N/A**	
RANK FOR PROJECT OBJECTIVE: Support regional and local economic development			**1**	**1**	
PROJECT OBJECTIVE: Provide value for money					
Achieve a justifiable benefit / cost ratio at an affordable cost.	**Benefit-Cost Ratio (BCR) over 30 years from 2019 based on strategic cost estimates**	**Ratio of Benefits/Costs**	**2.3**	**2.5**	
	Strategic cost estimate (2011 $M)	**$ million**	**$170**	**$163**	
Develop a strategy to integrate future upgrades into the project.	**N/A for assessment purposes. Design requirement.**	**N/A**	**N/A**	**N/A**	
RANK FOR PROJECT OBJECTIVE: Provide value for money			**2**	**1**	**Options considered very similar here, but Option E slightly better on BCR**

PROJECT OBJECTIVES	**CORRIDOR 1**		
	F	**E**	**COMMENTS**
RANK FOR PROJECT OBJECTIVE: Minimise impact on the environment	**2**	**1**	**Property acquistion considered the most important issue by the participants for this objective. Noise impacts are also considered very important (re: residential and tourism).**
RANK FOR PROJECT OBJECTIVE: Enhance road safety for all road users over the length of the project	**1**	**2**	**Intersections considered more important for this objective**
RANK FOR PROJECT OBJECTIVE: Improve traffic efficiency between and within Grafton and South Grafton	**1**	**1**	**No significant differentiation between these options for this objective**
RANK FOR PROJECT OBJECTIVE: Support regional and local economic development	**1**	**1**	
RANK FOR PROJECT OBJECTIVE: Provide value for money	**2**	**1**	**Options considered very similar here, but Option E slightly better on BCR**
OVERALL RANK OF OPTIONS	**2**	**1**	

SUPPORTING OBJECTIVE	INDICATORS		CORRIDOR 2										
	INDICATORS	UNIT	5	A	B	6	C	D	I	8	9	10	COMMENTS
PROJECT OBJECTIVE: Minimise impact on the environment													
Minimise impact on the natural environment.	Length through potential EEC	m	10	40	30	20	30	30	20	100	160	210	
	Length through other native vegetation	m	670	360	400	300	420	340	390	280	260	110	
		SCORE	10	8	9	10	9	9	10	7	6	5	EEC considered more important for scoring purposes
Minimise the impact on residential amenity, including noise, vibration, air quality etc.	Number of residential properties with a doubling of traffic at 10 years after opening (2029).	Number	37	7	0	40	3	14	20	11	152	232	The indicator counts for Options 9 and 10 were checked and confirmed
	Number of noise sensitive community facilities with a doubling of traffic at 10 years after opening (2029).	Number	1	2	0	0	2	6	2	2	0	1	
		SCORE	5	8	10	5	9	5	6	7	2	1	
	Number of residential properties with a halving of traffic at 10 years after opening (2029).	Number	56	36	15	46	79	80	72	72	27	14	
	Number of noise sensitive community facilities with a halving of traffic at 10 years after opening	Number	10	4	4	7	11	11	11	8	1	5	
		SCORE	8	6	4	7	10	10	9	9	5	4	
Minimise the impact on heritage.	Aboriginal - is option likely to directly affect a culturally significant Aboriginal site (Yes/No)	Yes or No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Options 5 and A: No major known constraints in Grafton or South Grafton Options B and 6: Have close proximity to mouth of Alipou Ck and Golden Eel site in South Grafton. Options C, D and I: Not acceptable, due to alignment through Alipou Ck and Golden Eel site in South Grafton. If realigned closer to existing bridge, these may score better. Option 8: Not preferable due to alignment through and proximity to marriage tree, Alipou Ck and Golden Eel site in South Grafton. Options 9 and 10: Not preferable due to alignment through scarred trees in South Grafton, also, alignment through Fig Trees on Breimba St in Grafton. Any disturbance of Aboriginal items would require further consultation and LALC have requested a plaque or monument of recognition of the item.
	Aboriginal - length through high archaeological potential area	m	10	80	100	10	10	10	10	210	410	490	
		SCORE	10	10	5	5	0	0	0	2	2	2	Options 5 and A score best. Options C, D and I not acceptable with current alignment. If realigned closer to existing bridge, would score higher.
	Non-Aboriginal - number of heritage items of State Significance likely to be affected by the option	Number	0	3	3	2	0	0	1	0	0	0	
	Non-Aboriginal - number of heritage items of Local Significance likely to be affected by the option	Number	22	16	11	14	12	20	19	10	9	7	
	Non-Aboriginal - length through urban conservation area	m	3100	3210	3260	2490	1410	1110	920	1070	1590	1390	
		SCORE	5	10	10	6	9	7	10	10	9	9	A and B scored 10 because they utilise the existing crossing corridor.
Provide a project that fits sensitively into the built, natural and community context.	Height of new crossing compared to existing bridge (Corridor 2 only)	m above or below road deck level of existing bridge	-6.4	-6.7	1.0	2.3	-6.0	-6.0	-6.6	2.4	-4.6	0.5	
	Length of new bridge and viaduct	m	760	600	780	765	640	785	775	945	645	780	
	Length of new or upgraded approach road (at-grade or on embankment)	m	1691	1900	1814	1870	1871	1834	1677	2306	3116	3056	
	Geometry of the new route aligns with existing street or landscape patterns (Yes/No)	Yes or No	Yes	No	Yes	No	No	No	No	No	No	No	
		SCORE	7	10	8	2	9	9	8	2	7	7	Any options (immediately adjacent to the existing bridge) higher than the existing bridge have been scored lower. In scoring these options, there were personal views and aesthetics views considered.
Minimise flooding impact caused by the project.	Length of bridge across river	m	610	465	535	545	435	435	420	530	565	700	
	Length of viaduct across floodplain and minor creek crossings on Grafton side	m	150	135	245	220	205	350	355	415	0	0	
	Length of viaduct across floodplain and minor creek crossings on South Grafton side	m	0	0	0	0	0	0	0	0	80	80	
		SCORE	5	10	10	8	9	9	9	7	5	5	A and B scored same due to similar impact on flooding - piers align with existing (due to proximity to existing bridge).
Minimise the impact on the social environment, including property impacts.	Number of community facilities potentially affected	Number	7	7	3	3	2	3	3	1	2	0	
	Number of properties (excluding community facilities) potentially affected	Number	36	27	26	34	30	54	48	36	31	23	Property acquisition considered the most important issue by the participants for this objective.
		SCORE	5	8	9	6	7	3	4	6	7	10	Option 5 impacts on the Bowling Club and Ex-Servicemen's Club. Options were scored based on acquisition of residential properties - considered more important than the community facilities.
RANK FOR PROJECT OBJECTIVE: Minimise impact on the environment			5	1	2	3	4	10	9	6	7	8	Property acquistion considered the most important issue by the participants for this objective. Noise impacts are also considered very important (re: residential and tourism).

PROJECT OBJECTIVE: Enhance road safety for all road users over the length of the project													
Reduce the potential for road crashes and injuries on the bridge and approaches including any intersections and connecting roads	**Number of tight horizontal curves**	**Number**	**0**	**3**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	
	Number of sharp crest vertical curves	**Number**	**2**	**3**	**3**	**3**	**3**	**2**	**1**	**1**	**0**	**0**	
	Number of locations with a steep grade	**Number**	**1**	**2**	**1**	**1**	**1**	**1**	**1**	**1**	**0**	**1**	
		SCORE	**6**	**3**	**4**	**5**	**5**	**6**	**8**	**7**	**10**	**9**	
	Number of intersections where approach volumes in 2019 are very high	**Number**	**2**	**2**	**3**	**1**	**1**	**0**	**0**	**1**	**0**	**0**	
	Number of intersections where approach volumes in 2019 are moderately high	**Number**	**3**	**3**	**2**	**4**	**3**	**2**	**4**	**2**	**4**	**4**	
		SCORE	**5**	**5**	**4**	**6**	**7**	**10**	**9**	**8**	**9**	**9**	
Provide safe facilities for pedestrians and cyclists	**N/A at this stage. Assume all options provide safe pedestrian and cyclist facilities. Not a differentiating issue at this stage.**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	
RANK FOR PROJECT OBJECTIVE: Enhance road safety for all road users over the length of the project			**6**	**10**	**9**	**8**	**7**	**4**	**3**	**5**	**1**	**2**	**Intersections considered more important for this objective**
PROJECT OBJECTIVE: Improve traffic efficiency between and within Grafton and South Grafton													
Provide efficient access for a second crossing of the Clarence River and for the State road network	**Estimated vehicle hours travelled (VHT) across whole network at assumed bridge opening in 2019**	**Vehicle-hours travelled**	**1968**	**1953**	**1958**	**1954**	**1986**	**1982**	**1987**	**1992**	**2036**	**2051**	
	Estimated vehicle hours travelled (VHT) across whole network at 20 years after opening (2039)	**Vehicle-hours travelled**	**3173**	**3135**	**3210**	**3142**	**3192**	**3173**	**3180**	**3193**	**3274**	**3302**	
Provide a traffic management network which reduces delays between Grafton and South Grafton in peak periods to an acceptable level of service for 30 years after opening.	**Estimated average travel time in minutes between Grafton and South Grafton in 2049 (minutes) during the AM peak using the existing bridge**	**Minutes**	**5**	**4**	**5**	**4**	**6**	**6**	**6**	**6**	**6**	**7**	
Provide adequate vertical clearance for heavy vehicles	**N/A. This not a differentiating issue, as it is assumed that all options can provide adequate vertical clearance for heavy vehicles. It is a design/cost issue.**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	
Consider demand management strategies to minimise delays to local and through traffic	**N/A. This is part of overall strategy for improvement of network - to be discussed in RODR**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	
RANK FOR PROJECT OBJECTIVE: Improve traffic efficiency between and within Grafton and South Grafton			**4**	**1**	**3**	**1**	**7**	**5**	**6**	**7**	**9**	**10**	**Not a significant difference between several of the options.**
PROJECT OBJECTIVE: Support regional and local economic development													
Provide transport solutions that complement existing and future land uses and support development opportunities.	**Vehicle hours travelled (VHT) for heavy vehicles across the modelled network in 2049.**	**Vehicle-hours travelled**	**60**	**57**	**57**	**58**	**59**	**58**	**59**	**59**	**61**	**61**	
Provide improved opportunities for economic and tourist development for Grafton.	**N/A at this stage. Not considered to differentiate between options within a corridor.**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	
Provide for commercial transport including B-doubles where required.	**Estimated average travel time in minutes between the Pacific Highway to the south and the Summerland Way to the north in 2049 using the new bridge.**	**Minutes**	**16**	**13**	**16**	**15**	**14**	**13**	**14**	**15**	**16**	**15**	
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.	**Does the option provide approach road flood immunity (1-in-20 year flood) under upgraded levee scenario? (Yes/No)**	**Yes or No**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	
Provide navigational clearance from the additional crossing for river users.	**N/A. Design requirement, included in cost**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	
RANK FOR PROJECT OBJECTIVE: Support regional and local economic development			**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**Options 5, C and D provide links to commercial areas that may have positive local economic impacts. Group decided to give all options a rank one because of the closeness of the indicators.**
PROJECT OBJECTIVE: Provide value for money													
Achieve a justifiable benefit / cost ratio at an affordable cost.	**Benefit-Cost Ratio (BCR) over 30 years from 2019 based on strategic cost estimates**	**Ratio of Benefits/Costs**	**1.6**	**2.1**	**1.8**	**1.9**	**2.2**	**1.8**	**1.9**	**1.8**	**1.8**	**1.6**	
	Strategic cost estimate (2011 $M)	**$ million**	**$261**	**$192**	**$214**	**$217**	**$177**	**$220**	**$207**	**$216**	**$209**	**$229**	
Develop a strategy to integrate future upgrades into the project.	**N/A for assessment purposes. Design requirement.**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	
RANK FOR PROJECT OBJECTIVE: Provide value for money			**10**	**2**	**6**	**3**	**1**	**8**	**3**	**6**	**5**	**9**	

PROJECT OBJECTIVES	**CORRIDOR 2**										
	5	**A**	**B**	**6**	**C**	**D**	**I**	**8**	**9**	**10**	**COMMENTS**
RANK FOR PROJECT OBJECTIVE: Minimise impact on the environment	**5**	**1**	**2**	**3**	**4**	**10**	**9**	**6**	**7**	**8**	**Property acquistion considered the most important issue by the participants for this objective. Noise impacts are also considered very important (re: residential and tourism).**
RANK FOR PROJECT OBJECTIVE: Enhance road safety for all road users over the length of the project	**6**	**10**	**9**	**8**	**7**	**4**	**3**	**5**	**1**	**2**	**Intersections considered more important for this objective**
RANK FOR PROJECT OBJECTIVE: Improve traffic efficiency between and within Grafton and South Grafton	**4**	**1**	**3**	**1**	**7**	**5**	**6**	**7**	**9**	**10**	**Not a significant difference between several of the options.**
RANK FOR PROJECT OBJECTIVE: Support regional and local economic development	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**Options 5, C and D provide links to commercial areas that may have positive local economic impacts. Group decided to give all options a rank one because of the closeness of the indicators.**
RANK FOR PROJECT OBJECTIVE: Provide value for money	**10**	**2**	**6**	**3**	**1**	**8**	**3**	**6**	**5**	**9**	
OVERALL RANK OF OPTIONS	**8**	**1**	**3**	**2**	**4**	**9**	**7**	**5**	**6**	**10**	**Option A ranked best, but the group suggest design refinements are required to improve safety.**

SUPPORTING OBJECTIVE	INDICATORS		CORRIDOR 3					
	INDICATORS	UNIT	11	J	K	12	L	COMMENTS
PROJECT OBJECTIVE: Minimise impact on the environment								
Minimise impact on the natural environment.	Length through potential EEC	m	60	30	30	60	0	
	Length through other native vegetation	m	210	410	170	140	540	
	SCORE		6	8	9	7	10	EEC considered more important for scoring purposes
Minimise the impact on residential amenity, including noise, vibration, air quality etc.	Number of residential properties with a doubling of traffic at 10 years after opening (2029).	Number	149	233	80	65	61	
	Number of noise sensitive community facilities with a doubling of traffic at 10 years after opening (2029).	Number	0	1	3	1	1	
	SCORE		5	2	8	9	10	
	Number of residential properties with a halving of traffic at 10 years after opening (2029).	Number	92	66	44	58	59	
	Number of noise sensitive community facilities with a halving of traffic at 10 years after opening	Number	6	5	6	6	6	
	SCORE		10	9	6	8	8	
Minimise the impact on heritage.	Aboriginal - is option likely to directly affect a culturally significant Aboriginal site (Yes/No)	Yes or No	No	No	No	No	No	All options are similar. No known major items of Aboriginal cultural significance.
	Aboriginal - length through high archaeological potential area	m	0	240	30	30	0	All options have potential to impact on areas of Aboriginal archaeological potential.
	SCORE		10	10	10	10	10	No differentiation between options in Corridor 3 for Aboriginal heritage.
	Non-Aboriginal - number of heritage items of State Significance likely to be affected by the option	Number	0	0	1	1	0	
	Non-Aboriginal - number of heritage items of Local Significance likely to be affected by the option	Number	4	2	3	2	2	
	Non-Aboriginal - length through urban conservation area	m	920	730	1260	1200	490	
	SCORE		9	9	8	8	10	
Provide a project that fits sensitively into the built, natural and community context.	Height of new crossing compared to existing bridge (Corridor 2 only)	m above or below road deck level of existing bridge	0	0	0	0	0	
	Length of new bridge and viaduct	m	870	960	1290	1390	1640	
	Length of new or upgraded approach road (at-grade or on embankment)	m	2455	2229	4050	4186	4857	
	Geometry of the new route aligns with existing street or landscape patterns (Yes/No)	Yes or No	Yes	Yes	Yes	No	Yes	
	SCORE		10	10	8	7	5	
Minimise flooding impact caused by the project.	Length of bridge across river	m	420	450	545	515	560	
	Length of viaduct across floodplain and minor creek crossings on Grafton side	m	0	120	80	80	80	
	Length of viaduct across floodplain and minor creek crossings on South Grafton side	m	450	390	665	795	1000	
	SCORE		10	9	8	8	5	
Minimise the impact on the social environment, including property impacts.	Number of community facilities potentially affected	Number	1	1	2	4	0	
	Number of properties (excluding community facilities) potentially affected	Number	18	18	23	29	41	Property acquistion considered the most important issue by the participants for this objective.
	SCORE		10	10	7	5	4	
RANK FOR PROJECT OBJECTIVE: Minimise impact on the environment			1	2	3	5	3	Property acquistion considered the most important issue by the participants for this objective. Noise impacts are also considered very important (re: residential and tourism).

PROJECT OBJECTIVE: Enhance road safety for all road users over the length of the project								
Reduce the potential for road crashes and injuries on the bridge and approaches including any intersections and connecting roads	Number of tight horizontal curves	Number	0	0	0	0	0	
	Number of sharp crest vertical curves	Number	0	0	0	0	0	
	Number of locations with a steep grade	Number	1	0	0	0	0	
		SCORE	10	10	10	10	10	
	Number of intersections where approach volumes in 2019 are very high	Number	2	2	2	2	2	
	Number of intersections where approach volumes in 2019 are moderately high	Number	2	2	2	2	2	
		SCORE	10	10	10	10	10	
Provide safe facilities for pedestrians and cyclists	N/A at this stage. Assume all options provide safe pedestrian and cyclist facilities. Not a differentiating issue at this stage.	N/A	N/A	N/A	N/A	N/A	N/A	
RANK FOR PROJECT OBJECTIVE: Enhance road safety for all road users over the length of the project			1	1	1	1	1	Intersections considered more important for this objective
PROJECT OBJECTIVE: Improve traffic efficiency between and within Grafton and South Grafton								
Provide efficient access for a second crossing of the Clarence River and for the State road network	Estimated vehicle hours travelled (VHT) across whole network at assumed bridge opening in 2019	Vehicle-hours travelled	2139	2165	2195	2204	2278	
	Estimated vehicle hours travelled (VHT) across whole network at 20 years after opening (2039)	Vehicle-hours travelled	3474	3553	3616	3643	3706	
Provide a traffic management network which reduces delays between Grafton and South Grafton in peak periods to an acceptable level of service for 30 years after opening.	Estimated average travel time in minutes between Grafton and South Grafton in 2049 (minutes) during the AM peak using the existing bridge	Minutes	11	14	14	14	17	
Provide adequate vertical clearance for heavy vehicles	N/A. This not a differentiating issue, as it is assumed that all options can provide adequate vertical clearance for heavy vehicles. It is a design/cost issue.	N/A	N/A	N/A	N/A	N/A	N/A	
Consider demand management strategies to minimise delays to local and through traffic	N/A. This is part of overall strategy for improvement of network - to be discussed in RODR	N/A	N/A	N/A	N/A	N/A	N/A	
RANK FOR PROJECT OBJECTIVE: Improve traffic efficiency between and within Grafton and South Grafton			1	2	2	2	5	
PROJECT OBJECTIVE: Support regional and local economic development								
Provide transport solutions that complement existing and future land uses and support development opportunities.	Vehicle hours travelled (VHT) for heavy vehicles across the modelled network in 2049.	Vehicle-hours travelled	67	67	69	70	69	
Provide improved opportunities for economic and tourist development for Grafton.	N/A at this stage. Not considered to differentiate between options within a corridor.	N/A	N/A	N/A	N/A	N/A	N/A	
Provide for commercial transport including B-doubles where required.	Estimated average travel time in minutes between the Pacific Highway to the south and the Summerland Way to the north in 2049 using the new bridge.	Minutes	17	17	15	15	16	
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.	Does the option provide approach road flood immunity (1-in-20 year flood) under upgraded levee scenario? (Yes/No)	Yes or No	Yes	Yes	Yes	Yes	Yes	
Provide navigational clearance from the additional crossing for river users.	N/A. Design requirement, included in cost	N/A	N/A	N/A	N/A	N/A	N/A	
RANK FOR PROJECT OBJECTIVE: Support regional and local economic development			1	1	1	1	1	
PROJECT OBJECTIVE: Provide value for money								
Achieve a justifiable benefit / cost ratio at an affordable cost.	Benefit-Cost Ratio (BCR) over 30 years from 2019 based on strategic cost estimates	Ratio of Benefits/Costs	1.6	1.5	1.0	1.0	0.8	
	Strategic cost estimate (2011 $M)	$ million	$205	$212	$280	$292	$335	
Develop a strategy to integrate future upgrades into the project.	N/A for assessment purposes. Design requirement.	N/A	N/A	N/A	N/A	N/A	N/A	
RANK FOR PROJECT OBJECTIVE: Provide value for money			1	2	3	4	5	

PROJECT OBJECTIVES	CORRIDOR 3					
	11	J	K	12	L	COMMENTS
RANK FOR PROJECT OBJECTIVE: Minimise impact on the environment	1	2	3	5	3	Property acquistion considered the most important issue by the participants for this objective. Noise impacts are also considered very important (re: residential and tourism).
RANK FOR PROJECT OBJECTIVE: Enhance road safety for all road users over the length of the project	1	1	1	1	1	Intersections considered more important for this objective
RANK FOR PROJECT OBJECTIVE: Improve traffic efficiency between and within Grafton and South Grafton	1	2	2	2	5	
RANK FOR PROJECT OBJECTIVE: Support regional and local economic development	1	1	1	1	1	
RANK FOR PROJECT OBJECTIVE: Provide value for money	1	2	3	4	5	
OVERALL RANK OF OPTIONS	1	2	3	4	5	

SUPPORTING OBJECTIVE	INDICATORS		CORRIDOR 4				
	INDICATORS	UNIT	14	20	21	M	COMMENTS
PROJECT OBJECTIVE: Minimise impact on the environment							
Minimise impact on the natural environment.	Length through potential EEC	m	0	50	40	60	
	Length through other native vegetation	m	510	430	530	400	
		SCORE	10	8	8	8	EEC considered more important for scoring purposes, and even though there are slight differences in Options 20, 21 and M, they are considered similar and score same
Minimise the impact on residential amenity, including noise, vibration, air quality etc.	Number of residential properties with a doubling of traffic at 10 years after opening (2029).	Number	63	65	69	67	
	Number of noise sensitive community facilities with a doubling of traffic at 10 years after opening (2029).	Number	4	5	5	3	
		SCORE	7	9	9	10	There are more houses currently being built (incl Council approvals) around Option 14 (on Grafton side of river). There is potential for development in future along North St.
	Number of residential properties with a halving of traffic at 10 years after opening (2029).	Number	43	43	30	29	
	Number of noise sensitive community facilities with a halving of traffic at 10 years after opening	Number	6	6	4	4	
		SCORE	10	10	8	8	
Minimise the impact on heritage.	Aboriginal - is option likely to directly affect a culturally significant Aboriginal site (Yes/No)	Yes or No	No	Yes	Yes	Yes	Options 20, 21 and M are not acceptable as they cross over Elizabeth Island. Elizabeth Island is an area of high Aboriginal cultural significance.
	Aboriginal - length through high archaeological potential area	m	0	140	150	210	
		SCORE	10	0	0	0	Option 14 is best in Corridor 4 for Aboriginal heritage. Any option over Elizabeth Island is unacceptable to the Aboriginal community.
	Non-Aboriginal - number of heritage items of State Significance likely to be affected by the option	Number	0	0	0	0	
	Non-Aboriginal - number of heritage items of Local Significance likely to be affected by the option	Number	2	2	3	3	
	Non-Aboriginal - length through urban conservation area	m	390	390	390	390	
		SCORE	10	10	10	10	
Provide a project that fits sensitively into the built, natural and community context.	Height of new crossing compared to existing bridge (Corridor 2 only)	m above or below road deck level of existing bridge	0	0	0	0	
	Length of new bridge and viaduct	m	1870	2185	2180	2210	
	Length of new or upgraded approach road (at-grade or on embankment)	m	4759	4480	4791	4564	
	Geometry of the new route aligns with existing street or landscape patterns (Yes/No)	Yes or No	No	Yes	No	Yes	Not a major misalignment for Options 14 and 20 for connection points to road network, however, 14 is skewed across the river
		SCORE	10	8	8	8	Based on length of bridge and size of embankments
Minimise flooding impact caused by the project.	Length of bridge across river	m	740	965	990	965	
	Length of viaduct across floodplain and minor creek crossings on Grafton side	m	80	60	60	60	
	Length of viaduct across floodplain and minor creek crossings on South Grafton side	m	1050	1160	1130	1185	
		SCORE	10	8	8	8	Viaducts, bridges and piers change the impact on the flooding. Option 14 has shortest length across river and for viaducts, therefore scores best.
Minimise the impact on the social environment, including property impacts.	Number of community facilities potentially affected	Number	1	3	3	3	Thoroughbred horse industry use river at end of Kirchner St to swim their horses. Corcoran Park considered a very important social area for Grafton.
	Number of properties (excluding community facilities) potentially affected	Number	18	17	18	18	Property acquistion considered the most important issue by the participants for this objective.
		SCORE	7	10	10	10	Option 14 impacts on Corcoran Park (including access), and associated activities, therefore scores lower. Corcoran Park considered a very important social area for Grafton.
RANK FOR PROJECT OBJECTIVE: Minimise impact on the environment			1	3	4	2	14 scores best. M scores better than 20 due to better score for doubling of traffic noise. Property acquistion considered the most important issue by the participants for this objective. Noise impacts are also considered very important (re: residential and tourism).

PROJECT OBJECTIVE: Enhance road safety for all road users over the length of the project							
Reduce the potential for road crashes and injuries on the bridge and approaches including any intersections and connecting roads	**Number of tight horizontal curves**	**Number**	**0**	**0**	**0**	**0**	
	Number of sharp crest vertical curves	**Number**	**0**	**0**	**0**	**0**	
	Number of locations with a steep grade	**Number**	**0**	**0**	**0**	**0**	
		SCORE	**10**	**10**	**10**	**10**	
	Number of intersections where approach volumes in 2019 are very high	**Number**	**2**	**2**	**2**	**2**	
	Number of intersections where approach volumes in 2019 are moderately high	**Number**	**2**	**2**	**2**	**2**	
		SCORE	**10**	**10**	**10**	**10**	
Provide safe facilities for pedestrians and cyclists	**N/A at this stage. Assume all options provide safe pedestrian and cyclist facilities. Not a differentiating issue at this stage.**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	
RANK FOR PROJECT OBJECTIVE: Enhance road safety for all road users over the length of the project			**1**	**1**	**1**	**1**	**20 and M have two conflict points, whereas 14 and 21 connect to Centenary Dr and only has one conflict point. Intersections considered more important for this objective**
PROJECT OBJECTIVE: Improve traffic efficiency between and within Grafton and South Grafton							
Provide efficient access for a second crossing of the Clarence River and for the State road network	**Estimated vehicle hours travelled (VHT) across whole network at assumed bridge opening in 2019**	**Vehicle-hours travelled**	**2414**	**2497**	**2437**	**2510**	
	Estimated vehicle hours travelled (VHT) across whole network at 20 years after opening (2039)	**Vehicle-hours travelled**	**3851**	**3922**	**3923**	**3976**	
Provide a traffic management network which reduces delays between Grafton and South Grafton in peak periods to an acceptable level of service for 30 years after opening.	**Estimated average travel time in minutes between Grafton and South Grafton in 2049 (minutes) during the AM peak using the existing bridge**	**Minutes**	**16**	**19**	**16**	**18**	
Provide adequate vertical clearance for heavy vehicles	**N/A. This not a differentiating issue, as it is assumed that all options can provide adequate vertical clearance for heavy vehicles. It is a design/cost issue.**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	
Consider demand management strategies to minimise delays to local and through traffic	**N/A. This is part of overall strategy for improvement of network - to be discussed in RODR**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	
RANK FOR PROJECT OBJECTIVE: Improve traffic efficiency between and within Grafton and South Grafton			**1**	**3**	**2**	**4**	
PROJECT OBJECTIVE: Support regional and local economic development							
Provide transport solutions that complement existing and future land uses and support development opportunities.	**Vehicle hours travelled (VHT) for heavy vehicles across the modelled network in 2049.**	**Vehicle-hours travelled**	**67**	**69**	**70**	**70**	
Provide improved opportunities for economic and tourist development for Grafton.	**N/A at this stage. Not considered to differentiate between options within a corridor.**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	
Provide for commercial transport including B-doubles where required.	**Estimated average travel time in minutes between the Pacific Highway to the south and the Summerland Way to the north in 2049 using the new bridge.**	**Minutes**	**14**	**15**	**16**	**15**	
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.	**Does the option provide approach road flood immunity (1-in-20 year flood) under upgraded levee scenario? (Yes/No)**	**Yes or No**	**Yes**	**Yes**	**Yes**	**Yes**	
Provide navigational clearance from the additional crossing for river users.	**N/A. Design requirement, included in cost**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	
RANK FOR PROJECT OBJECTIVE: Support regional and local economic development			**1**	**2**	**4**	**3**	
PROJECT OBJECTIVE: Provide value for money							
Achieve a justifiable benefit / cost ratio at an affordable cost.	**Benefit-Cost Ratio (BCR) over 30 years from 2019 based on strategic cost estimates**	**Ratio of Benefits/Costs**	**0.7**	**0.5**	**0.6**	**0.5**	
	Strategic cost estimate (2011 $M)	**$ million**	**$357**	**$408**	**$416**	**$416**	
Develop a strategy to integrate future upgrades into the project.	**N/A for assessment purposes. Design requirement.**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	
RANK FOR PROJECT OBJECTIVE: Provide value for money			**1**	**3**	**2**	**4**	

PROJECT OBJECTIVES	**CORRIDOR 4**				
	14	**20**	**21**	**M**	**COMMENTS**
RANK FOR PROJECT OBJECTIVE: Minimise impact on the environment	**1**	**3**	**4**	**2**	**14 scores best. M scores better than 20 due to better score for doubling of traffic noise. Property acquistion considered the most important issue by the participants for this objective. Noise impacts are also considered very important (re: residential and tourism).**
RANK FOR PROJECT OBJECTIVE: Enhance road safety for all road users over the length of the project	**1**	**1**	**1**	**1**	**20 and M have two conflict points, whereas 14 and 21 connect to Centenary Dr and only has one conflict point. Intersections considered more important for this objective**
RANK FOR PROJECT OBJECTIVE: Improve traffic efficiency between and within Grafton and South Grafton	**1**	**3**	**2**	**4**	
RANK FOR PROJECT OBJECTIVE: Support regional and local economic development	**1**	**2**	**4**	**3**	
RANK FOR PROJECT OBJECTIVE: Provide value for money	**1**	**3**	**2**	**4**	
OVERALL RANK OF OPTIONS	**1**	**2**	**2**	**4**	

SUPPORTING OBJECTIVE	INDICATORS		CORRIDOR 5				
	INDICATORS	UNIT	15	23	25	26	COMMENTS
PROJECT OBJECTIVE: Minimise impact on the environment							
Minimise impact on the natural environment.	Length through potential EEC	m	0	130	130	50	
	Length through other native vegetation	m	1110	610	800	860	
	SCORE		10	7	7	9	EEC considered more important for scoring purposes
Minimise the impact on residential amenity, including noise, vibration, air quality etc.	Number of residential properties with a doubling of traffic at 10 years after opening (2029).	Number	32	84	20	95	
	Number of noise sensitive community facilities with a doubling of traffic at 10 years after opening (2029).	Number	3	2	1	1	
	SCORE		8	6	10	5	There are more houses currently being built (incl Council approvals) around Option 15 (on Grafton side of river).
	Number of residential properties with a halving of traffic at 10 years after opening (2029).	Number	43	30	30	30	
	Number of noise sensitive community facilities with a halving of traffic at 10 years after opening	Number	6	4	4	4	
	SCORE		10	8	8	8	
Minimise the impact on heritage.	Aboriginal - is option likely to directly affect a culturally significant Aboriginal site (Yes/No)	Yes or No	Yes	Yes	Yes	Yes	Options 23 and 25 are not acceptable as they cross over Elizabeth Island. Elizabeth Island is an area of high Aboriginal cultural significance. Great Marlow is also an area of high Aboriginal cultural significance. As such, option 26 scores less than option 15, as option 15 crosses areas that have already been disturbed (Kirchner St).
	Aboriginal - length through high archaeological potential area	m	130	1290	890	1050	
	SCORE		10	0	0	5	Option 15 is best in Corridor 5 for Aboriginal heritage. Any option over Elizabeth Island is unacceptable to the Aboriginal community.
	Non-Aboriginal - number of heritage items of State Significance likely to be affected by the option	Number	0	1	1	1	
	Non-Aboriginal - number of heritage items of Local Significance likely to be affected by the option	Number	2	2	2	1	
	Non-Aboriginal - length through urban conservation area	m	390	840	840	840	
	SCORE		10	8	8	9	
Provide a project that fits sensitively into the built, natural and community context.	Height of new crossing compared to existing bridge (Corridor 2 only)	m above or below road deck level of existing bridge	0	0	0	0	
	Length of new bridge and viaduct	m	1915	2395	2480	2420	
	Length of new or upgraded approach road (at-grade or on embankment)	m	6175	5994	6237	7634	
	Geometry of the new route aligns with existing street or landscape patterns (Yes/No)	Yes or No	No	No	Yes	No	Not a major misalignment for Option 15 for connection points to road network, however, 15 is skewed across the river
	SCORE		10	8	8	6	
Minimise flooding impact caused by the project.	Length of bridge across river	m	720	755	775	585	
	Length of viaduct across floodplain and minor creek crossings on Grafton side	m	145	370	420	530	
	Length of viaduct across floodplain and minor creek crossings on South Grafton side	m	1050	1270	1285	1305	
	SCORE		8	7	7	10	
Minimise the impact on the social environment, including property impacts.	Number of community facilities potentially affected	Number	3	0	0	0	Thoroughbred horse industry use river at end of Kirchner St to swim their horses. Corcoran Park considered a very important social area for Grafton.
	Number of properties (excluding community facilities) potentially affected	Number	19	15	24	31	Property acquistion considered the most important issue by the participants for this objective.
	SCORE		6	9	10	10	More impact to urban residential properties with Option 15, than for other options. Alignment of road and the physical nature of land, and land use with properties boundaries was considered important. Need to consider impacts to rural activities when acquiring properties.
RANK FOR PROJECT OBJECTIVE: Minimise impact on the environment			1	4	3	2	Property acquistion considered the most important issue by the participants for this objective. Noise impacts are also considered very important (re: residential and tourism).

PROJECT OBJECTIVE: Enhance road safety for all road users over the length of the project							
Reduce the potential for road crashes and injuries on the bridge and approaches including any intersections and connecting roads	**Number of tight horizontal curves**	**Number**	**0**	**0**	**0**	**0**	
	Number of sharp crest vertical curves	**Number**	**0**	**0**	**0**	**0**	
	Number of locations with a steep grade	**Number**	**0**	**0**	**0**	**0**	
		SCORE	**10**	**10**	**10**	**10**	
	Number of intersections where approach volumes in 2019 are very high	**Number**	**2**	**2**	**2**	**2**	
	Number of intersections where approach volumes in 2019 are moderately high	**Number**	**2**	**2**	**2**	**2**	
		SCORE	**10**	**10**	**10**	**10**	
Provide safe facilities for pedestrians and cyclists	**N/A at this stage. Assume all options provide safe pedestrian and cyclist facilities. Not a differentiating issue at this stage.**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	
RANK FOR PROJECT OBJECTIVE: Enhance road safety for all road users over the length of the project			**1**	**1**	**1**	**1**	**Intersections considered more important for this objective**
PROJECT OBJECTIVE: Improve traffic efficiency between and within Grafton and South Grafton							
Provide efficient access for a second crossing of the Clarence River and for the State road network	**Estimated vehicle hours travelled (VHT) across whole network at assumed bridge opening in 2019**	**Vehicle-hours travelled**	**2418**	**2583**	**2683**	**2714**	
	Estimated vehicle hours travelled (VHT) across whole network at 20 years after opening (2039)	**Vehicle-hours travelled**	**3855**	**4205**	**4342**	**4373**	
Provide a traffic management network which reduces delays between Grafton and South Grafton in peak periods to an acceptable level of service for 30 years after opening.	**Estimated average travel time in minutes between Grafton and South Grafton in 2049 (minutes) during the AM peak using the existing bridge**	**Minutes**	**15**	**23**	**27**	**25**	
Provide adequate vertical clearance for heavy vehicles	**N/A. This not a differentiating issue, as it is assumed that all options can provide adequate vertical clearance for heavy vehicles. It is a design/cost issue.**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	
Consider demand management strategies to minimise delays to local and through traffic	**N/A. This is part of overall strategy for improvement of network - to be discussed in RODR**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	
RANK FOR PROJECT OBJECTIVE: Improve traffic efficiency between and within Grafton and South Grafton			**1**	**2**	**4**	**3**	
PROJECT OBJECTIVE: Support regional and local economic development							
Provide transport solutions that complement existing and future land uses and support development opportunities.	**Vehicle hours travelled (VHT) for heavy vehicles across the modelled network in 2049.**	**Vehicle-hours travelled**	**68**	**71**	**73**	**75**	
Provide improved opportunities for economic and tourist development for Grafton.	**N/A at this stage. Not considered to differentiate between options within a corridor.**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	
Provide for commercial transport including B-doubles where required.	**Estimated average travel time in minutes between the Pacific Highway to the south and the Summerland Way to the north in 2049 using the new bridge.**	**Minutes**	**14**	**14**	**15**	**14**	
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.	**Does the option provide approach road flood immunity (1-in-20 year flood) under upgraded levee scenario? (Yes/No)**	**Yes or No**	**Yes**	**Yes**	**Yes**	**Yes**	
Provide navigational clearance from the additional crossing for river users.	**N/A. Design requirement, included in cost**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	
RANK FOR PROJECT OBJECTIVE: Support regional and local economic development			**1**	**2**	**3**	**3**	
PROJECT OBJECTIVE: Provide value for money							
Achieve a justifiable benefit / cost ratio at an affordable cost.	**Benefit-Cost Ratio (BCR) over 30 years from 2019 based on strategic cost estimates**	**Ratio of Benefits/Costs**	**0.6**	**0.4**	**0.3**	**0.3**	
	Strategic cost estimate (2011 $M)	**$ million**	**$389**	**$434**	**$458**	**$463**	
Develop a strategy to integrate future upgrades into the project.	**N/A for assessment purposes. Design requirement.**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	
RANK FOR PROJECT OBJECTIVE: Provide value for money			**1**	**2**	**3**	**3**	

PROJECT OBJECTIVES	**CORRIDOR 5**				
	15	**23**	**25**	**26**	**COMMENTS**
RANK FOR PROJECT OBJECTIVE: Minimise impact on the environment	**1**	**4**	**3**	**2**	**Property acquistion considered the most important issue by the participants for this objective. Noise impacts are also considered very important (re: residential and tourism).**
RANK FOR PROJECT OBJECTIVE: Enhance road safety for all road users over the length of the project	**1**	**1**	**1**	**1**	**Intersections considered more important for this objective**
RANK FOR PROJECT OBJECTIVE: Improve traffic efficiency between and within Grafton and South Grafton	**1**	**2**	**4**	**3**	
RANK FOR PROJECT OBJECTIVE: Support regional and local economic development	**1**	**2**	**3**	**3**	
RANK FOR PROJECT OBJECTIVE: Provide value for money	**1**	**2**	**3**	**3**	
OVERALL RANK OF OPTIONS	**1**	**3**	**4**	**2**	**Group discussed whether 2 options should be selected to go forward, given that Option 15 is similar to Option 14.**

ATTACHMENT C

Comments and issues raised by workshop participants for the project team's consideration are listed below. It should be noted that the issues below were raised by individuals and are not necessarily the consensus view of all participants at the workshop.

General issues raised
In relation to the social and economic indicators, include businesses and commercial areas on Villiers St in the land use and planning section (Chapter 5.2) of the report.
The pedestrian and cycle path should not be included in some options, to help reduce costs.
The noise indicators consider impacts outside of the corridor under consideration in addition to those within the corridor under consideration. This is inconsistent with the general approach of only considering issues within each corridor. The noise indicators regarding "doubling of traffic" were considered more important in the decision making process than those showing "halving of traffic".
The project team needs to consider accessibility to public transport when identifying the short list of options.
River users indicate that they require navigational clearance of up to 27m for any new bridge downstream of the existing bridge. The project team advised that NSW Maritime have been consulted and have advised that minimum vertical navigational clearances of 15m are required downstream of Pound St, and 9.1m upstream of Pound St. The preliminary options have been designed in accordance with these requirements.
Options in Corridors 4 and 5 are impacted by fog. This relates to road safety and should be considered in the short-listing process and selection of recommended preferred option.
Consider refining Options 20 and M to avoid impacting on Elizabeth Island, but still connect the Pacific Highway with North St.
Consider the use of Duke St for the heavy vehicle route back into town from the downstream options.
Corridors 4 and 5 overlap and options 14 and 15 are very similar (ie options 14 and 15 both connect to Kirchner St). Some residents are disadvantaged by having these in separate corridors, and that they are potentially affected twice. The project team advised that Options 14 and 15 were suggested by the community. When the corridors were identified by the project team, Corridor 4 included options between the Pacific Highway and North St, while Corridor 5 included options between the Pacific Highway and Summerland Way north of North St. Hence, Option 14 was included in Corridor 4, and Option 15 was included in Corridor 5.
Consider realigning options 14 and 15 to maintain access and avoid or minimise impacts on Corcoran Park.
Access and connectivity to existing properties and facilities needs to be considered for any new bridge and approach roads. Severance and fragmentation of farm / agricultural land should be considered for downstream options. Also consider connectivity between properties, eg: access under viaducts.

Residential property acquisition was considered very important for the participants. Some options scored lower than others due to the high social impact of property acquisition along the option alignment. Residential noise impacts were also considered very important. Noise also impacts on tourism and businesses.
The project team should consider all residential properties for the project, including those with approved DA's (and not yet built) and those with DA's currently under Council consideration. Consider planned growth areas and land use zoning during further investigations and modelling.
The project team should consult with NSW Maritime regarding water speed limits around new bridge and minimum distances required for clearance from structure. Consider the impacts on activities around Corcoran Park from changes in river use with a new bridge in this vicinity.
Two participants expressed concern that the project objectives have changed from the 2003/04 objectives.
Some participants expressed concern regarding access and evacuation during emergencies, including nursing homes and the hospital.
Acquisition of rural property could potentially have adverse impacts on the local agricultural industry.
Any options running along Pound St and running beneath the rail viaduct would have drainage issues where the road is lowered, including high groundwater table.
One participant stated that Corridor 2 impacts more properties than any other corridor. Some participants suggest all options in Corridor 2 should have scored zero for property impacts.
For heavy vehicles, need to consider: • Ability for heavy vehicles to safely negotiate any turns and roundabouts • Number of roundabouts and intersections along the route • Facilities for drivers, including food, amenities and accommodation.
Need to consider the Council waterfront precinct plans and the associated urban design issues of a new bridge and approach roads, particularly for options upstream of the existing bridge. Also, from a Council planning perspective, it is important to consider high intensity activity areas.
Need to consider the economic benefits of linking the Grafton and South Grafton commercial centres.
Some participants noted that the connection to Summerland Way was important.
Some participants are concerned that when the Pacific Highway is closed, Grafton and the Summerland Way becomes the alternative route. This needs to be considered in the future, even with the Pacific Highway upgrade.

Issues and suggested improvements to consider for the recommended options
Corridor 1 – Option E: • St Marys School on Villiers St has closed. • Concern that Villiers St north of CBD may need to be upgraded. • Funnels traffic into Villiers St – consider traffic and intersection solutions at each connection point. • May have a negative visual impact on the South Grafton Ex-Servicemen's Club and Bowling Club. • If the Pacific Highway is closed, Option E is not a good option as all traffic will be funnelled into Grafton CBD. • Impacts on the rowing course.
Corridor 2 – Option A: • Consider widening Villiers St to 4 lanes in the future. • Has considerable negative property impacts. • Funnels all traffic into Fitzroy St. Look at opportunities in Grafton to direct traffic away from Fitzroy St. • Look at opportunities in South Grafton to direct traffic away from Bent St.
Corridor 3 – Option 11: • Option 11 does not direct traffic to where it should go in South Grafton. • Look for opportunities to provide a curved connection to Dobie St, rather than a dog leg from Villiers St. • Need better identification of heavy vehicle routes. Many trucks continue along Villiers St past Dobie St to Hoof St, then out to Summerland Way. Any new bridge and connecting roads should take this into account to keep heavy vehicles on the designated route. • Look at improving the efficiency of Dobie Street as a transport route. • Increases potential flood risk on south side of river. Levees in South Grafton are lower than in Grafton.
Corridor 4 – Option 14: • Ensure access is maintained to Corcoran Park. • Ensure Corcoran Park maintains it's ability to function as a community facility for river use and other activities. • Consider realigning Option 14 to avoid Corcoran Park and Kirchner St and connect directly into North St (whilst still missing Elizabeth Island). • Option 14 has a skew across the river. Consider straightening the bridge to reduce visual and flooding impacts. • Increases potential flood risk on south side of the river. Levees in South Grafton are lower than in Grafton. • Consider impacts on Council's sewerage treatment plant.
Corridor 5 – Option 15:

- Ensure access is maintained to Corcoran Park.
- Ensure Corcoran Park maintains it's ability to function as a community facility for river use and other activities.
- Consider realigning Option 14 to avoid Corcoran Park and Kirchner St and connect directly into North St (whilst still missing Elizabeth Island).
- Option 15 has a skew across the river. Consider straightening the bridge to reduce visual and flooding impacts.
- Increases potential flood risk on south side of the river. Levees in South Grafton are lower than in Grafton.
- Some participants object to any option that crosses Great Marlow due to the Aboriginal cultural significance of the area.
- Consider the intersection with Summerland Way – do not use a T-intersection, rather, join the approach road directly with the road to Junction Hill, and add a turn-off to Turf St..
- Consider impacts on Council's sewerage treatment plant.

Appendix 7 – Community feedback on Preliminary Route Options Report - Parts 1 and 2

ADDITIONAL CROSSING OF THE CLARENCE RIVER AT GRAFTON

Community feedback on *Preliminary Route Options Report – Parts 1 and 2*

JANUARY 2012

1. Introduction and background

This report documents the community feedback received on the *Preliminary Route Options Report – Parts 1 and 2*.

Roads and Maritime Services (RMS, formerly RTA) is currently working towards the identification of a preferred location for an additional crossing of the Clarence River at Grafton. The NSW Government is funding these investigations. In December 2010 RMS announced a revised community consultation process to identify a preferred location for an additional crossing. The December 2010 community update identified 13 preliminary route options which included the additional options previously suggested by the community following the March 2010 community discussions. A shopping centre display, and postal, telephone and business surveys undertaken between December 2010 and March 2011 inviting community comment, received a further 28 crossing suggestions, bringing the total suggested locations to 41.

In June 2011, RMS released the *Feasibility Assessment Report* which describes the assessment undertaken on the 41 suggestions identified following the December 2010 to March 2011 community consultation period. The report identified 25 preliminary route options in five corridors for further engineering and environmental investigation.

2. Preliminary Route Options Report

In August 2011 RMS released the *Preliminary Route Options Report – Part 1*, which included background papers on issues to consider when planning an additional crossing. Part 1 describes the existing environment in Grafton and South Grafton and the issues and constraints relevant to an additional crossing.

Community information and feedback drop-in sessions were held over two days: Monday 22 August, from 2-4pm and 6-8pm, and Tuesday 23 August, from 10am-12pm. Members of the project team provided information to residents about the report and some of the issues and constraints.

Comments and feedback on the report were invited by Tuesday 30 August 2011 for consideration by the project team.

In October 2011 the *Preliminary Route Options Report – Parts 1 and 2* was released for community comment. Part 1 was also updated to incorporate community feedback received from the August consultation period. Part 2 contains an assessment of the 25 preliminary route options within five strategic corridors against the issues and constraints identified in Part 1. The criteria used to assess the 25 preliminary options are based on the project purpose and objectives.

With the release of the *Preliminary Route Options Report – Parts 1 and 2*, RMS distributed a Community Update inviting feedback on the report by 22 November 2011. The Community Update outlined the report and advertised a series of information and feedback drop-in sessions to be held at the Grafton Community Centre on:

- Monday 14 November 2011 from 2pm to 4pm and from 6pm to 8pm.
- Tuesday 15 November 2011 from 10am to 12pm.

The sessions provided an opportunity for the Grafton community to speak one-on-one with the project team and provide comments about the assessment of the 25 preliminary route options

outlined in the report. Feedback forms were provided and attendees were encouraged to fill them in at the time, or return by 22 November 2011 (refer to Appendix A). A total of 20 people attended the November 2011 information and feedback drop-in sessions.

All feedback received will be considered as part of the short-listing process by RMS. Where relevant, issues raised in community feedback will be incorporated into the *Preliminary Route Options Report – Final*.

3. Consultation feedback summary

Up until 1 December 2011, 36 submissions had been received in relation to the *Preliminary Route Options Report – Parts 1 and 2*.These submissions included written submissions received by post and email, and verbal feedback recorded by the project team at the information and feedback sessions.

The submissions raised a range of issues which have been categorised by the project team. A summary of the key comments / issues raised is provided below:

- Traffic: traffic congestion in the CBD and Grafton area; the need to avoid sensitive areas; concerns regarding future traffic management; and the accuracy of reports to date.
- Planning: comments and questions relating to the location of route options; alternative transport and facilities; future industrial and residential growth and the need to plan for improved connections; the integration of this project with other potential projects; and recreational requirements.
- Social impacts: property acquisitions; impact on community facilities; sensitive areas; events and recreation; and impacts on the amenity of Grafton due to increased traffic growth.
- Economic impacts: concerns and comments relating to benefit cost ratios in relation to investigations already undertaken.
- Design: designing for flood protection and navigational clearance for tall sail boats.
- Project objectives: concerns about the consideration of project objectives in relation to other key studies; and addressing earlier outcomes against the findings of the Preliminary Route Options Report.
- Community consultation: concerns about addressing outcomes of the postal and business surveys in the Preliminary Route Options Report; wider representation at the community and stakeholder evaluation workshop and the process to identify a short-list of route options.
- Environment: concerns about noise monitoring and Aboriginal archaeological potential and cultural significance being fully considered.

As well as raising issues for consideration by the project team, several submissions included a preference for individual options, a preferred corridor, or a preferred option in each of the five corridors.

A complete list of feedback received is documented in Appendix B. RMS has numbered each submission and provided responses to address the issues raised in the submissions. All feedback received will be considered as part of the short-listing process by RMS. Where relevant, issues raised in community feedback will be incorporated into the *Preliminary Route Options Report – Final.*

4. Next steps

A community and stakeholder evaluation workshop was undertaken on 25 and 26 November 2011. The purpose of the workshop was to gain a shared understanding of which option(s) within each corridor provide the best balance across social, environmental, economic, engineering and cost issues. The workshop recommended one option within each of the five strategic corridors to go forward for further investigation.

Community comment, outcomes of the community and stakeholder evaluation workshop, and technical investigations undertaken to date will help identify the short-list of options to be taken forward for further investigation.

Following an announcement on the short-list of options, further technical and environmental investigations will be undertaken to provide more detailed information on the relative performance of the options. The investigations will be reported in the *Route Options Development Report* (RODR).

When completed, the RODR will be displayed for community comment. Community comments received, together with the investigations undertaken and the outcomes of the Value Management Workshop will input into a decision on a recommended preferred option.

Feedback from the display of the recommended preferred option will be considered before a decision is made on the preferred location for an additional crossing of the Clarence River at Grafton.

Community involvement will continue throughout the process for selecting the recommended preferred location for an additional crossing.

Further information is provided in the *Preliminary Route Options Report - Final.*

APPENDIX A

November 2011 Information and feedback sessions – Feedback form

Additional crossing of the Clarence River at Grafton

Welcome to the community information and feedback drop-in sessions for the Preliminary Route Options Report Part 2. This report provides an assessment on the 25 preliminary route options within five strategic corridors against the issues and constraints identified in Grafton and surrounds.

The purpose of this information and feedback session is to provide an opportunity for you to speak one on one with the project team about the assessment of the 25 preliminary route options outlined in the report and to invite you to comment on the report. Your feedback will then be considered as part of the short-listing process by the Roads and Maritime Services (RMS, formally the RTA).

How to navigate the room
Tables are arranged around the room displaying maps and information related to the five strategic corridors.

Project team members will be available at the tables to answer questions and provide information related to the particular issues/options. You can approach the table/s displaying the map relating to the corridor you are interested in. Maps are there to assist you with understanding the information. These maps may be drawn on to provide feedback.

The assessment criteria in the *Preliminary Route Options Report* Part 2 relate to the project objectives:

- 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.
- Provide value for money.
- Minimise impact on the environment.

If you wish to provide comment, you may complete the back page of this form and leave in the box marked Preliminary Route Option Report, Part 2 comments.

If you would like to provide comments at a later date, please provide by **Tuesday 22 November 2011** by emailing graftonbridge@rta.nsw.gov.au, or writing to Chris Clark, RMS Project Manager, PO Box 546, Grafton NSW 2460.

Thank you for coming today.

PRELIMINARY ROUTE OPTIONS REPORT PART 2 FEEDBACK FORM

(Comments are welcome on the Part 2 of the Preliminary Route Options Report by completing this feedback form and leaving it in the box provided or handing it to one of the project team).

Session Location: Session Date: Time:

Contact details

Name:

Contact number:

☐ *I would like to receive future emails/mail about the project (please tick and complete the contact details below)*

☐ Contact email/postal address:

Comments

Privacy: The Roads and Maritime Services (RMS) is subject to the Privacy and Personal Information Protection Act 1998 ("PPIP Act") which requires that we comply with the Information Privacy Principles set out in the PPIP Act. All information in correspondence is collected for the sole purpose of assisting in the development of the Long Term Strategic Corridor Plan. The information may be accessed by the RMS and/or the RMS's project contractors. All information received, including names and addresses of respondents, may be published in subsequent documents unless a clear indication is given in the correspondence that all or part of that information is not to be published. Otherwise the RMS will only disclose your personal information, without your consent, if authorised by law. Your personal information will be held by the RMS office in Grafton. You have the right to access and correct the information if you believe that it is incorrect.

On 1 November 2011 a new organisation called Roads and Maritime Services (RMS) was formed to replace the Roads and Traffic Authority (RTA). The RMS will focus solely on delivering quality services to its customers.

APPENDIX B

Summary of feedback received during consultation for *The Preliminary Route Options Report – Part 2*

The community feedback received has been categorised into the following issues: traffic, planning, social impacts, economic impacts, design, project objectives, community consultation, environment and community corridor and option preferences. All submissions received have been numbered and responses by RMS have been provided to address the issues raised in the submissions.

Issue category: Traffic

This category includes comments on traffic congestion in the CBD and Grafton area, avoiding sensitive areas and concerns regarding future traffic management.

Issues raised	Submission no	Response
Keep traffic out of town. Fitzroy St is too congested already.	2	RMS understands the need to reduce traffic congestion. For each of the short-listed options, detailed traffic modelling will be undertaken to understand the traffic impacts of each of the options taken forward. The traffic modelling will also identify opportunities to reduce congestion and possibly refine the design of the options to provide the best possible traffic outcomes for the short and long-term transport needs of Grafton and South Grafton.
The existing bridge should remain and cater mainly for local traffic. Concerns about ensuring the existing Grafton Bridge will remain in operation to accommodate mostly local traffic travelling to and from South Grafton and Grafton.	3, 36	The existing bridge will remain open to traffic. Depending on which option is selected as the preferred option, the existing bridge may remain as 1 lane each way, or it may be changed to 1 lane in 1 direction only. The Refer to Section 6 of the report for further details on option descriptions and lane configurations.
Use Bent St as the southern approach road to maximise most of the volume of South Grafton to North Grafton traffic flow.	6	Bent St is utilised by several of the options in Corridor 2. For each of the short-listed options, detailed traffic modelling will be undertaken to understand the traffic impacts of each of the options taken forward. The traffic modelling will also identify opportunities to provide the best possible traffic outcomes for the short and long-term transport needs of Grafton and South Grafton.
Need to put weight limits on heavy vehicles traversing school zones, such as along Oliver Street, as this is too dangerous.	6	The preferred option will become the new freight route across the river. Heavy vehicle routes for access in and out of the CBD and other areas will be designated. This will be undertaken in consultation with Clarence Valley Council.
Would envisage a future set of traffic lights on the Fitzroy/Villiers St intersection as this would break up traffic flow and cope with higher future traffic volumes.	6	As part of the detailed traffic modelling, traffic flows and intersection types will be reviewed in the next stage of investigations. The need for upgrades to existing and future intersections will be investigated.
It is essential that traffic be diverted out of the CBD areas of South Grafton and Grafton. The traffic bottlenecks should not be moved from the bridge to city streets.	8	The project objective „Improve traffic efficiency between and within Grafton and South Grafton" has been developed to look at traffic management across the network as well reducing current traffic congestion. Some of the preliminary options connect to the Grafton and South Grafton commercial areas. For each of the short-listed options, detailed traffic modelling will be undertaken to understand the traffic impacts of each of the options taken forward. The traffic modelling will also identify opportunities to provide the best possible traffic outcomes for the short and long-term transport needs of Grafton and South Grafton.
Any new bridge should be a minimum of three lanes to manage traffic flow and reduce travel time, especially during emergencies and peak	9	Lane configurations will be determined during the detailed traffic modelling of the short-listed options. Emergency access and congestion at peak times will be two key considerations during the

times, eg two southbound and one northbound or vice versa.		next stage if investigations. Refer to Section 6 of the report for further details on option design and lane configurations.
The only sensible place to put a new bridge which will take traffic away from the main part of town is taking traffic away from the main shopping area.	13	For each of the short-listed options, detailed traffic modelling will be undertaken to understand the traffic impacts of each of the options taken forward. The traffic modelling will also identify opportunities to provide the best possible traffic outcomes for the short and long-term transport needs of Grafton and South Grafton.
Putting traffic on the west of the railway would add to the congestion.	16	Reduce traffic congestion is a key consideration of this project. For each of the short-listed options, detailed traffic modelling will be undertaken to understand the traffic impacts of each of the options taken forward. The traffic modelling will also identify opportunities to reduce congestion and possibly refine the design of the options to provide the best possible traffic outcomes for the short and long-term transport needs of Grafton and South Grafton.
Is there any strategic traffic modelling that would give likely future volumes on the potential routes?	19	The strategic traffic modelling and assessment that was undertaken for the *Preliminary Route Options Report – Part 2*, provides details of anticipated traffic volumes on each of the 25 preliminary route options, for the years 2019, 2029, 2039 and 2049. Refer to Chapter 7 of the *Strategic Traffic Assessment Technical Paper* (Preliminary Route Options Report - Volume 2). Also refer to the March 2011 *Heavy Vehicle Study* report on the project website.
The information shows several cross-sections for the bridge but there does not appear to be any for the approach roads. Would the new routes have limited access? And if so how would access for residential properties be arranged – is there adequate space in the existing corridor?	19	In the next stage of investigations, traffic flows, access and intersection types will be refined for the bridge, approach roads and the existing road network. The width of the road corridor and requirement for the acquisition of properties will also be refined. The refined concept designs will also identify access for properties along the approach roads. Road safety will also be considered in this process. Cross-sections of the bridge and approach roads will be developed as part of the design updates.
Concerns about the accuracy of the 2011 Traffic Study in relation to: • The 2011 traffic count report percentages are skewed as they were taken on a Thursday, the busiest shopping day, late night shopping day and a major Centrelink payment day. The 2009 traffic study took place on a Wednesday (11 March 2009). • Peak time flow counts (7am to 9am and 3pm to 5pm) on Wednesday 18 August 2010 and Thursday 19 August 2010 are almost the same. Hence the increase of local traffic from 45% in the 2009 study to 58% in the 2011 study report occurred outside peak times.	27	Continuous 24hr seven day automated classified traffic counts were conducted between 19 August 2010 and 26 August 2010. These traffic counts were conducted at the same time as the origin-destination (OD) surveys for the *Heavy Vehicle Study Report*, released in March 2011. The purpose of these traffic counts was to capture changes in travel patterns over a typical week to supplement the OD data. The OD survey, (completed between 5am and 7pm on 19 August 2010) captured 92% of traffic crossing the existing Grafton Bridge. This is considered a good representation of daily traffic crossing the Grafton Bridge. As summarised in Section 1.3 of the March 2011 *Heavy Vehicle Study* report, the 2009 OD traffic survey was taken at six locations over two 3 hour peak periods (7am-10am and 3pm-6pm). As identified in Section 3.2 of the March 2011 *Heavy Vehicle Study* report, the 2010 OD traffic survey was taken at 13 locations over a 14 hour period (5am-7pm). As such, the 2010 OD traffic survey captures a more complete representation of travel patterns in Grafton and surrounds.

		The fact that the counts were taken on a Thursday in 2010 is not considered to skew the results of the survey. In addition, as shown in Figure 4.22 of the March 2011 *Heavy Vehicle Study* report, Friday 20 August 2010 provided the highest weekday volumes for all trips across the bridge, for the seven day tube counts.
• The geographical study area of 2010 traffic count (2011 report) is larger than the 2009 count and included Clarenza and Junction Hill (north of Oliver St) and a much larger area of South Grafton.		Yes, the geographical area of the August 2010 traffic counts (reported in the March 2011 *Heavy Vehicle Study Report* and shown in Figure 2.1 of that report) was larger than the area for the 2009 traffic counts. As stated in the report, "The study area aims to capture all vehicle trips entering the Grafton and South Grafton townships and the movement of trips within." This data was used to update the strategic traffic model at that time.
• The traffic count in 2010 was only taken between 5am and 7pm and the B-double curfew occurs for 5 hours in this period, from 7.30am to 9.30am and 3pm to 6pm.		As discussed above, the OD survey was conducted for a 14 hour period between 5am and 7pm on 19 August 2010. However, simultaneous to the OD survey, 24hr seven day automated classified tube counts were also being taken. This data was collected for all vehicle types (ie light vehicles, and heavy vehicles including B-doubles and buses). The tube count data was used to supplement the OD survey data. As stated in Section 4.1.1 of the *Heavy Vehicle Study Report*, "Based on the tube count information (discussed in Section 4.2), the OD survey period is representative of 92% of all traffic crossing the Grafton Bridge on the day of the survey. This is considered a good representation of daily traffic crossing the Grafton Bridge."
• Sensor counters were not working at a number of locations for the majority of the count timeframe in the 2010 traffic count (2011 report). Two of these were very critical locations – one on Villiers St and the other on the Summerland Way.		Data recorded during the problematic periods was excluded from the reporting and discussion and did not impact on the outcome of the results as these represented a small percentage of the entire data set for all sites. Additional counts were conducted in 2011 as part of the refinement of the strategic traffic model for the *Preliminary Route Options Report*. The locations of the additional counts are shown on Figure 2.5 of the *Preliminary Route Options Report - Volume 2 Technical Paper: Strategic Traffic Assessment*. The Summerland Way count was conducted in the same location as the 2010 location. The Villiers Street count was not in the same location but was considered sufficiently close to the earlier count location. This data was used in the assessment of the preliminary route options.

• A number of local trucking companies did not receive the emailed questionnaire about the RTA"s Heavy Vehicle Traffic Study.		In excess of 30 key industry owners and freight operators were contacted to participate in the questionnaire survey. Eight responses were received. RMS also consulted with the Grafton Chamber of Commerce and Industry (GCCI) when developing and conducting the online business survey. RMS received 104 completed business surveys from business owners and managers. RMS continue to consult with the business community and have included a representative from the GCCI, the freight transport and public transport industries in the community and stakeholder evaluation workshop. Transport companies will continue to be consulted in the project to identify a preferred location for an additional crossing of the Clarence River at Grafton.
Concerns about altering the traffic statistics wording from the 2009 and 2010 traffic study data to read in the *Preliminary Route Options Report – Parts 1 and 2* (PROR) "97% or 98% of traffic has an origin or destination in Grafton or South Grafton", whereas the actual 2009/2010 report and presentation provides a breakdown of percentages, such as 45% internal to internal traffic, 53% external to internal and 2% through traffic.	27	Concern noted. The sentence was adjusted to reflect that two surveys were conducted and to act as a summary of the other supporting technical reports. The data from the 2009 traffic studies show that 2% of traffic travelling over the existing Grafton Bridge is considered as "through" traffic. The 2010 studies show that 3% of traffic using the existing bridge is "through" traffic. The balance of traffic (98% in 2009 and 97% in 2010) has an origin and / or destination in Grafton or South Grafton. A full breakdown of the 2010 trip types crossing the Grafton Bridge is provided in Table 1.2 of the *Strategic Traffic Assessment Technical Paper* which is in Volume 2 of the *Preliminary Route Options Report*. Table 1.2 shows that 58% of traffic using the existing bridge is internal to internal traffic, 39% is external to internal or internal to external, and 3% is external to external (ie "through" trips). The 2009 data shows that 45% of traffic using the existing bridge is internal to internal traffic, 53% is external to internal or internal to external, and 2% is "through" traffic.
Concerns about lack of long term traffic management plan for Grafton City in place for assessment.	27	Concern noted. RMS has consulted with Clarence Valley Council regarding traffic modelling throughout the project. This consultation will continue through the short-listing process and selection of preferred option in order to consider the long term traffic management of Grafton City.
Concerns about the existing road network: • The Regional road network diagram showing the 25/26m B-double routes is incorrect. The B-double route extends up the Summerland Way to Kyogle. From Kyogle the B-double route extends to the Queensland border and is restricted to 19m D-doubles. • Suitability of local roads (particularly near the hospital) designated as B-double routes connecting to Summerland Way.	27	It is acknowledged that Figure 9 in the Preliminary Route Options Report – Parts 1 and 2 is incorrect. The Preliminary Route Options Report – Part 1 contained the correct version of the figure, however, an error has occurred in Preliminary Route Options Report - Part 2. This figure will be updated to the correct B-double route in the Preliminary Route Options Report – Final. Heavy vehicle access for the 25 preliminary route options is identified in Chapter 6 of the Preliminary Route Options Report. Potential B-double routes will be refined during the assessment of the short-listed options and the final designated B-double route will be confirmed following the selection of the recommended preferred option. Clarence Valley Council will be consulted throughout this process. Roads along the potential B-double routes will be reviewed and where appropriate, provision will be included in the cost estimates for the

		short-listed options for any required upgrading of roads. When determining suitable roads for B-double access, aspects such as road geometry, height clearance, access to freight facilities and the location of community facilities will be considered.
Concerns about the origin-destination survey and existing traffic demands. The PROR does not provide current truck counts for the road network in and around Grafton, especially on Villiers St and the Summerland Way through Grafton. • Why not? • How can an accurate BCR be assessed without this data? The 2011 Heavy Traffic Vehicle Study shows nearly 1,500 heavy vehicles cross the Grafton bridge per day and 850 heavy vehicles travel along Villiers St per day and Junction Hill and Clarenza are classed as internal to internal. • Why was this information not provided in the PROR?	27	Figures 2.6 and 2.7 of the Strategic Traffic Assessment Technical Paper which is in Volume 2 of the Preliminary Route Options Report show the location and daily volume for light commercial and heavy vehicles volumes in Grafton. The traffic volumes used for the BCR calculations in the Preliminary Route Options Report are based on the data collected in the 2010 and 2011 traffic surveys. The BCR calculations are considered appropriate for this stage of the development of the project. The calculations are being used comparatively at this stage of the process to assess the preliminary route options within each of the five corridors. During the next stage of the process, when more detailed information regarding traffic movements (from the detailed traffic model) and construction costs (from refined designs) are available, BCR calculations will be refined for the short-list of route options. The numbers of heavy vehicle movements identified in the March 2011 Heavy vehicle study report were used in the strategic traffic model for the Preliminary Route Options Report. The Preliminary Route Options Report refers to that data in Table 23 (Chapter 7.1.3.1), where all data sources used in the strategic traffic modelling including the March 2011 Heavy Vehicle Study are listed.
Concerned about lack of current truck counts for the road network in and around Grafton, especially Villiers St and Summerland Way through Grafton.	27	The traffic counts used in developing the strategic traffic model for the *Preliminary Route Options Report*, including truck counts, are shown in Figures 2.4 to 2.9 in the *Strategic Traffic Assessment Technical Paper* which is in Volume 2 of the *Preliminary Route Options Report.* This data was collected between 2006 and 2011. Traffic counts, including truck counts, have been taken along Villiers St and Summerland Way during this period.
Concerns about the need to move the gazetted B-double route to the new bridge on the outskirts of Grafton. Concerns about the need to move the timber jinkers, semi-trailers, B-doubles and as many coaches as possible to the new bridge on the outskirts of Grafton.	36	Heavy vehicle access for the 25 preliminary route options is identified in Chapter 6 of the Preliminary Route Options Report. Potential B-double routes will be refined during the assessment of the short-listed options and the final designated B-double route will be confirmed following the selection of the recommended preferred option. Clarence Valley Council will be consulted throughout this process. Roads along the potential B-double routes will be reviewed and where appropriate, provision will be included in the cost estimates for the short-listed options for any required upgrading of roads. When determining suitable roads for B-double access, aspects such as road geometry, height clearance, access to freight facilities and the location of community facilities will be considered.
Concerns about the need to address issues and impacts outlined in the Draft 2009 Traffic Study Report in relation to options A, B, C, D near the existing bridge • Steep grade issues from the bridge into	36	The investigations undertaken for the *Preliminary Route Options Report* build upon previous investigations conducted for the project. This includes review of the process undertaken and outcomes of the 2003/04 investigations and value management workshop, and the traffic studies which were reported in 2009 and 2010. The outcomes of the previous studies considered for the *Preliminary Route Options Report* are discussed in Appendix 1 of the

town (increasing noise, vibration, pollution etc) • Truck routes through town • Capacity issues in Pound, Fitzroy and Villiers Sts • Possible ring road • Local roads closed (such as Greaves, Kent, Bridge, Pound, Clarence and Bacon Sts) • Possible truck and bus route diversions • Connectivity issues with local road network – some roads closed, segregation of the town.		report. The identification of the constraints and impacts and the development of the concept designs is considered adequate and appropriate for the assessment of the 25 preliminary route options and the identification of the short-listed options to be taken forward for further investigation. Design issues (including the issues raised in this submission) will be considered further during the detailed investigations of the short-list of route options to be taken forward for further investigation.

Issue category: Social impacts

This category includes comments about property acquisitions, impact on community facilities, sensitive areas, events and recreation and impacts on the amenity of Grafton due to increased traffic growth.

Issues raised	Submission no	Response
Avoid Pound Street due to property acquisitions and social impact of taking properties.	2	Social impacts will be taken into consideration when determining a recommended preferred option. The preferred route for the crossing of the Clarence River and any road connections will be selected by assessing which option represents the most appropriate balance between functional, social, environmental, engineering and cost factors.
Concerns about the social impact of utilising Dobie Street from Villiers to McHugh Street.	12	Social impacts will be taken into consideration when determining a recommended preferred option. The preferred route for the crossing of the Clarence River and any road connections will be selected by assessing which option represents the most appropriate balance between functional, social, environmental, engineering and cost factors.
Arthur St is not an appropriate access road for the bridge as it contains the Grafton Base Hospital and two nursing homes. The impacts on community facilities needs to be based on the number of people affected, not the number of facilities affected. Also, impacting nursing homes and other places people live is more important than sporting club facilities.	22, 32	The impact on community facilities such as the hospital and nursing homes will be considered further during the detailed investigations of the short-list of route options. The number of people potentially affected by impacts on community facilities will be included in the considerations.
Concerns about social impacts, including	26	Social impacts, access to properties and maintaining accessibility into the town centre will be

property impacts and would like to maintain good accessibility into the town centre.		taken into consideration when determining a recommended preferred option. The preferred route for the crossing of the Clarence River and any road connections will be selected by assessing which option represents the most appropriate balance between functional, social, environmental, engineering and cost factors.
Concerns that important events and recreational activities are not considered in relation to impacts on streets and parking in and around Grafton. These include: • The Grafton Agricultural Show in May – Villiers St is closed one afternoon during the show. • Grafton Truck Show in May – at the Showground on Prince and Villiers Streets. • North Coast Open Tennis Championships in June at the Fisher Park complex. • Gate to Plate at the Showground in September. • Prince St to Arthur St is closed in November for the Jacaranda procession. Concerned there is no mention or consideration of the many activities and competitions attracting both locals and tourists to Fisher Park, which impact on access, pedestrians and parking in Prince, Villiers and Oliver Sts. Fisher Park should be included as a constraint in the diagram on p 63 (Preliminary Route Options Report – Parts 1 and 2). Page 57 states the TAFE market is on Craig St but these markets are at the TAFE College on the corner of Clarence St and Pound St.	27	Social impacts, including the activities and events in Fisher Park, will be taken into consideration when determining a recommended preferred option. These issues will be considered further during the detailed investigations of the short-list of route options, in order to provide the best possible balance across social, environmental, economic, engineering and cost issues. Fisher Park has been included as a constraint to Figure 28 and Chapter 5.3.1 in the *Preliminary Route Options Report - Final*. The TAFE market location has been noted and corrected in *Preliminary Route Options Report - Final*.
Concerned about impacts on amenity and lifestyle in Grafton with the RTA"s anticipated traffic growth along Villiers St to be at least 1,600 trucks per day by 2039 (not including the population and industry growth along the Summerland Way). In comparison the current RTA"s Pacific Highway truck counts are 2,250 per day. Concerns about the need to move the timber jinkers, semi-trailers, B-doubles and as many coaches as possible to the new bridge on the	27, 36	Social impacts, including amenity and lifestyle, and traffic impacts, including potential B-double route, will be taken into consideration when determining a recommended preferred option. These issues will be considered further during the detailed investigations of the short-list of route options, in order to provide the best possible balance across social, environmental, economic, engineering and cost issues.

outskirts of Grafton.		
For Options 14 and15, there would be a huge impact on Corcoran Park, used for boating, and impacts on the Scout Hall.	32, 34	Corcoran Park has been identified as an important community facility. Community facilities will be considered further during the detailed investigations of the short-list of route options, in order to provide the best possible balance across social, environmental, economic, engineering and cost issues.
Having a bridge downstream would move noise, vehicles and heavy vehicles into an area that is currently a quiet residential area.	32	Social impacts, including noise and traffic, will be taken into consideration when determining a recommended preferred option. These issues will be considered further during the detailed investigations of the short-list of route options, in order to provide the best possible balance across social, environmental, economic, engineering and cost issues.
A large number of residents who live out of the CBD in Corridors 4 and 5 do not want their lifestyle and amenity destroyed by a huge CBD bypass road.	34	Social impacts, including amenity and lifestyle, will be taken into consideration when determining a recommended preferred option. These issues will be considered further during the detailed investigations of the short-list of route options, in order to provide the best possible balance across social, environmental, economic, engineering and cost issues.

Issue category: Economic impacts

This category includes concerns and comments relating to benefit-cost ratios in relation to investigations already undertaken.

Issues raised	Submission no	Response
Has any financial evaluation been done on the alternate routes – such as comparison BCRs based on a strategic estimate?	19	Strategic cost estimates and road user benefit-cost ratios have been developed for comparative purposes at this stage of the process to assess the preliminary route options within each of the five corridors. Refer to the tables in Chapter 7 of the report for details on strategic cost estimates and BCRs for each of the 25 preliminary options. The assessment of the short-listed options will provide more detailed information regarding construction costs and road user benefits. Updated BCR analyses will be undertaken for the short-list of route options.
A BCR of less than 1.0 means that from a road network efficiency viewpoint, the benefits achieved do not match the investment made and any option with a BCR of less than 1.0 should not be considered.	26	Strategic cost estimates and road user benefit-cost ratios have been developed for comparative purposes at this stage of the process to assess the preliminary route options within each of the five corridors. Refer to the tables in Chapter 7 of the report for details on strategic cost estimates and BCRs for each of the 25 preliminary options. The assessment of the short-listed options will provide more detailed information regarding construction costs and road user benefits. Updated BCR analyses will be undertaken for the short-list of route options. The preferred route for the crossing of the Clarence River and any road connections will be selected by assessing which option represents the most appropriate balance between functional, social, environmental, engineering and cost factors.
Concerns about calculating the benefit cost ratio for each route option against the altered project objectives and doing so prior to:	27	The detail included in the preliminary concept designs, strategic estimates (which include contingencies) and BCR analyses are considered adequate and appropriate for the identification of the short-list of options to go forward for further investigation.

• All relevant investigations being undertaken. • Design alternatives being considered. • Road network and intersection upgrades and ongoing maintenance being determined and assessed. • And all costs being estimated.		Strategic cost estimates and road user benefit-cost ratios have been developed for comparative purposes at this stage of the process to assess the preliminary route options within each of the five corridors. Refer to the tables in Chapter 7 of the report for details on strategic cost estimates and BCRs for each of the 25 preliminary options. The assessment of the short-listed options will provide more detailed information regarding construction costs and road user benefits. Updated BCR analyses will be undertaken for the short-list of route options.

Issue category: Design

This category includes concerns about bridge and approach road design, flood protection and navigational clearance for tall sail boats.

Issues raised	Submission no	Response
Has a design been selected for the second crossing? Is it intended to be at the level of the rail bridge or traffic deck if it is placed in the vicinity of the existing bridge? The level of the existing rail deck would create less visual interruption. Options of cantilevering a roadway for light traffic off the existing structure may also be worth considering.	6	The design of a new crossing has not yet been finalised and will be considered further during the detailed investigations of the short-list of route options. There are several issues that could determine the height of any new bridge in the Grafton area: • Navigational clearance requirements. • Some options in the vicinity of the existing bridge require crossing of the rail line. The Australian Rail and Track Corporation (ARTC) have advised that a minimum clearance of 5.2m above the rail line is required for any new crossing. • Urban design and landscape characteristics. • Geography of the land on either side of the river. • Flooding – any bridge requires immunity from a 1 in 100 year flood, and approach roads require immunity in a 1 in 20 year flood (except for viaducts across the floodplain which require 1 in 100 year flood immunity). • Constructability and cost considerations. These issues are discussed in Chapters 5 and 6 of the report. Options of cantilevering a roadway for light traffic off the existing structure have been previously investigated. Due to heritage and construction issues, these options are not considered feasible.
Concerns regarding flooding and flood protection in the Grafton area: • The flood levee systems in Grafton and South Grafton generally provide a 1 in 20 year flood immunity. The diagrams in the PROR Part 2 Appendix 4 show a viaduct at or above a 1 in 100 year flood level from the Pacific Highway	27	The specialist flooding consultant has provided the following advice in regard to this issue:: "To avoid potential flood impacts of a new crossing on the flood sensitive urban areas of Grafton and South Grafton, viaduct soffit levels above the 100-year ARI flood are recommended. Lowering of the viaduct soffit levels to the 20-year ARI flood within the section of floodplain (between the existing Pacific Highway and the Clarence River) will alter the existing catchment flood behaviour significantly. Increased hydraulic losses associated with the

Issues raised	Submission no	Response
to the new bridge. The impact of this on Grafton and South Grafton needs to be assessed. Perhaps a viaduct of 1 in 20 year flood level could be assessed and costed with a grade to the new bridge over the Clarence River. • New bridge options over Elizabeth Island could comprise one low level bridge over one channel and one high level bridge over the other channel instead of a high level bridge over both channels either side of Elizabeth Island. • These design alternatives were provided to the RTA to be included, costed and considered in line with the current supporting project objective "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" but the RTA has not provided a response.		inundation of the viaduct deck (when designed to the 20-year ARI flood level) will: 1. Reduce flood flows within the floodplain between the existing Pacific Highway and the Clarence River; 2. Increase upstream flood levels in both the Clarence River and the floodplain (between the existing Pacific Highway and the Clarence River); and 3. Increase upstream levee overtopping volumes, thereby increasing flood hazard within Grafton and South Grafton. To mitigate these impacts, major modifications to the Grafton and South Grafton levees (potentially for their entire lengths) may be required to counteract the flood behaviour changes resulting from the lower viaduct soffit levels. In such areas of flood sensitivity, such measures, requiring major changes in the catchment flood behaviour are not recommended. Where possible, maintenance of the existing flood behaviour and flow regime via design of viaduct soffit levels above the 100-year ARI flood are recommended." RMS is working with NSW Maritime and river users to confirm navigational clearance requirements. These clearance requirements will be incorporated into the refined designs for the short-list of route options to be taken forward for further investigation. There are several issues that could determine the height of any new bridge in the vicinity of Elizabeth Island, including: • Navigational clearance requirements. • Urban design and landscape characteristics. • Geography of the land on either side of the river. • Flooding – any bridge requires immunity from a 1 in 100 year flood, and approach roads require immunity in a 1 in 20 year flood (except for viaducts across the floodplain which require 1 in 100 year flood immunity). • Constructability and cost considerations. A response to this matter was provided on 12 December 2011.
Concerned that the PROR does not consider all constraints and impacts as previously considered in the 2003/2004 process such as connectivity, severance of the community, parking availability, roads closed, social and sporting events and recreational facilities. A number of design issues are also of concern including the overpass of Clarence St and the impact on noise and steep grade issues to connect to Villiers St and parking, connectivity and severance with local road networks.	27	The investigations undertaken for the *Preliminary Route Options Report* build upon previous investigations conducted for the project. This includes review of the process undertaken and outcomes of the 2003/04 investigations and value management workshop, and the traffic studies which were reported in 2009 and 2010. The outcomes of the previous studies considered for the *Preliminary Route Options Report* are discussed in Appendix 1 of the report. Design issues will be considered further during the detailed investigations of the short-list of route options to be taken forward for further investigation. The identification of the constraints and impacts and the development of the concept designs is considered adequate and appropriate for the assessment of the 25 preliminary route options and the identification of the short-listed options to be taken forward for further

Issues raised	Submission no	Response
		investigation.
Corridors 4 and 5 overlap and Options 14 and 15 are the same, except Option 15 extends to Summerland Way. Option 15 should have been included in Corridor 4. Options 14 and 15 appear skewed across the river and will have a greater visual impact on the surrounding area.	32, 34	Options 14 and 15 were suggestions identified by the community in the December 2010 – February 2011 consultation period, as discussed in Chapter 3.2 of the *Preliminary Route Options Report.* The identification of 25 preliminary route options from the community suggestions received was documented in the June 2011 *Feasibility Assessment Report*. The report also outlined the process to be used to identify a recommended preferred option from the 25 preliminary route options. This process includes: i. Identifying the best route option(s) within each of the strategic corridors based on technical investigations and community input. ii. Identifying a recommended preferred option from the best route option(s) within each corridor based on further technical investigations, community input and a Value Management Workshop. iii. Consideration of feedback from the display of the recommended preferred option before a decision is made on the preferred location. Corridor 4 included options between the Pacific Highway and North St, while Corridor 5 included options between the Pacific Highway and Summerland Way north of North St. Hence, Option 14 (which joins the Pacific Highway to North St via Kirchner St) was included in Corridor 4, and Option 15 (which joins the Pacific Highway with Summerland Way via Kirchner St) was included in Corridor 5. Visual impacts of the options will be considered during the assessment of the 25 preliminary route options and of the short-listed route options to go forward for further investigation.
Any new bridge height should adequately allow for tall yachts to reach Grafton. Clearance of over 26m should be allowed for.	32	NSW Maritime have been consulted and have advised that minimum vertical navigational clearances of 15m are required downstream of Pound St, and 9.1m upstream of Pound St. RMS is working with NSW Maritime and river users to confirm navigational clearance requirements. These clearance requirements will be incorporated into the refined designs for the short-list of route options to be taken forward for further investigation. There are several issues that could determine the height of any new bridge in the vicinity of Elizabeth Island, including: • Navigational clearance requirements. • Urban design and landscape characteristics. • Geography of the land on either side of the river. • Flooding – any bridge requires immunity from a 1 in 100 year flood, and approach roads require immunity in a 1 in 20 year flood (except for viaducts across the floodplain which require 1 in 100 year flood immunity). • Constructability and cost considerations.
A new bridge will impact yacht users of the	33, 34	NSW Maritime have been consulted and have advised that minimum vertical navigational

Issues raised	Submission no	Response
Clarence River, and will have consequences on the Clarence River Sailing and Cruising Guide. A vertical navigational clearance of 15m may impact on many yachts and restrict access into Grafton CBD, a long walk for sailors without vehicle access into town. This would also impact on sailing races. At least 22m vertical clearance is requires, maybe even 27m. Harwood Bridge opens to 36.5m, so tall-masted yachts will be stopped downstream of town, well short of the existing bridge.		clearances of 15m are required downstream of Pound St, and 9.1m upstream of Pound St. RMS is working with NSW Maritime and river users to confirm navigational clearance requirements. These clearance requirements will be incorporated into the refined designs for the short-list of route options to be taken forward for further investigation. There are several issues that could determine the height of any new bridge in the vicinity of Elizabeth Island, including: • Navigational clearance requirements. • Urban design and landscape characteristics. • Geography of the land on either side of the river. • Flooding – any bridge requires immunity from a 1 in 100 year flood, and approach roads require immunity in a 1 in 20 year flood (except for viaducts across the floodplain which require 1 in 100 year flood immunity). • Constructability and cost considerations.
Options in Corridors 4 and 5 are prone to very heavy flooding, and also foggy conditions resulting in poor visibility. Also, the numbers of piers required for long viaducts over the floodplain will increase the risk of flooding to the town. And the cost of building such long viaducts would be large, as would the cost of raising the levee walls on both sides of the river. Soft soils and the large cost of building long viaducts over these needs to be considered.	34	As part of the investigations into the short-listed options, detailed flood modelling will be undertaken and route options will include measures to maintain the existing flood immunity of the town. This may include an increase to the levee heights in some areas. Estimates of cost for the short-listed route options will include the cost of viaducts across the floodplain and, if required, raising of flood levees. Geotechnical investigations have been carried out to understand the geology of the Grafton area. Further investigations will be undertaken to better understand the engineering and cost implications of potentially constructing viaducts over the floodplain.

Issue category: Planning

This category includes comments and questions relating to location of route options, alternative transport and facilities, future industrial and residential growth and the need to plan for improved connections, other potential projects and recreational requirements.

Issues raised	Submission no	Response
Downstream options are better for future planning of the town.	2	Planning for the future is an important issue for this project. Refer to chapter 5 and chapter 7 of the *Preliminary Route Options Report*. This will be considered further during the investigations of the short-listed route options in the next stage of the process.
Other transport options for local commuters need to be considered eg: a monorail loop from South	6	The purpose of the current investigation is to identify an additional crossing of the Clarence

Issues raised	Submission no	Response
Hill via schools to CBD and north schools via existing bridge. This would reduce huge amounts of traffic as it would allow commuters to enter and leave the CBD without using cars.		River at Grafton to address short-term and long-term transport needs. It is acknowledged that alternative transport methods are an important consideration for the future planning of Grafton to help alleviate traffic congestion. RMS will continue to liaise with Clarence Valley Council on this issue.
Routes through Grafton for heavy vehicles need to be detailed and enforced.	6	The preferred option will become the new heavy vehicle access route across the river. Heavy vehicle routes for access in and out of the CBD and other areas will be identified and B-double routes designated. This will be undertaken in consultation with Clarence Valley Council.
Grafton (northside) is on a flood plain and in time with river siltation more industry and facilities will need to be relocated to higher ground.	8	The purpose of the current investigation is to identify an additional crossing of the Clarence River at Grafton to address short-term and long-term transport needs. There are no current proposals to relocate Grafton to higher ground.
No indications given for the number of lanes for bridge option 12 or for option L. One is left to presume that these would be two lane bridges.	9	All options in Corridor 3 would have 1 lane each way. Refer to Section 6 of the report for further details on option descriptions and lane configurations. The existing bridge will remain open to traffic. Depending on which option is selected as the preferred option, the existing bridge may remain as 1 lane each way, or it may be changed to 1 lane in 1 direction only.
The new bridge should better connect the Summerland Way to Grafton. Grafton Base Hospital"s referral hospital is now Lismore Base Hospital, to the north of Grafton.	10	One of the project objectives is to improve traffic efficiency between and within Grafton and South Grafton. A supporting objective is to provide efficient access for a second crossing of the Clarence River and for the State road network which includes the Summerland Way.
Use some of the ideas from the Ballina bypass by creating a new road and bridge into Grafton. The current options seem conservative eg, why not build a new rail line and move the rail line around Grafton as well?	12	The purpose of the current investigation is to identify an additional crossing of the Clarence River at Grafton to address short-term and long-term transport needs. Railway infrastructure in Grafton and South Grafton, including Grafton Bridge, is owned and managed by the Australian Rail and Track Corporation (ARTC). The proposal to relocate the rail line has been forwarded to ARTC for consideration.
Suggestion to provide everyone in Grafton with a „gopher scooter", as this would be cheaper and the vast majority of vehicles in the peak period contain only one person and most travel less than 5km. Suggestion to build a parking station at the railway and put a light rail commuter bus on the rail line to shuffle across the river, or a cycleway and footpath to Clarenza.	16	A new cycle and pedestrian path is being considered as part of any new river crossing. The cycle and pedestrian path would be suitable for use by „gopher scooters".
Concerned about planning of approach roads and access for residential properties.	19	As part of the refinement of the concept designs for the short-list of route options in the next stage of the project, traffic flows, access and intersection types will be reviewed for the bridge, approach roads and the existing road network. A review of the preliminary designs and access for residential properties will be undertaken.

Issues raised	Submission no	Response
		Road safety will also be considered in this process.
Concerned that not all constraints and impacts previously considered in the 2003/2004 process, including connectivity, severance of the community, parking availability, roads closed, social and sporting events, and recreational facilities, were considered in the PROR.	27	The investigations undertaken for the *Preliminary Route Options Report* build upon previous investigations conducted for the project. This includes review of the constraints and issues identified in the 2003/04 investigations and value management workshop, and the traffic studies which were reported in 2009 and 2010. The outcomes of the previous studies considered for the *Preliminary Route Options Report* are discussed in Appendix 1 of the report. These issues will be considered further during the detailed investigations of the short-list of route options, in order to provide the best possible balance across social, environmental, economic, engineering and cost issues.
Concerned that a number of relevant strategic documents are not being included for consideration, including: • Regional Development Australia Northern Rivers – 2011 Regional Plan. • RTA"s Network and Corridor Planning Practice Notes 2008. • Beyond the Pavement – RTA"s urban design policy, procedures and design principles. • Sharing the Main Street, RTA 2000. • RTA Environmental Noise Management Manual. • RTA Heritage Guidelines. • NSW 2021 State Plan. • Mid North Coast Regional Strategy. • Far North Coast Regional Strategy. • RTA Heritage Guidelines. • The aims and objectives of the Summerland Way Promotional Committee.	27	While the *Preliminary Route Options Report – Parts 1 and 2* includes an overview of the relevant government policy and strategy documents, it does not include an exhaustive list of documents relevant to the investigations. The listed documents have been considered in the development of the *Preliminary Route Options Report – Parts 1 and 2*. These documents, along with other RMS planning documents will continue to be considered during the detailed investigations of the short-listed route options in the next stage of the process. The Regional Development Australia Northern Rivers – 2011 Regional Plan and the NSW 2021 Plan were released at similar timing to finalising the *Preliminary Route Options Report – Parts 1 and 2*. These documents were considered in the development of the *Preliminary Route Options Report – Part 3*. The Summerland Way Promotional Committee has been consulted during the development of the *Preliminary Route Options Report*. A representative of the Committee was invited to attend the Community and Stakeholder Evaluation Workshop in November 2011, however, was unable to attend the workshop.
Concerns that major growth areas are only projected in the PROR for the next 30 years yet a new bridge will be in existence for 100 years or more. The location of a new bridge will determine the future of Grafton City.	27	The population forecasts used are taken from the *Mid North Coast Regional Strategy* and have been confirmed in consultation with Clarence Valley Council and NSW Department of Planning and Infrastructure. The information in the *Preliminary Route Options Report – Parts 1 and 2* is based on their population forecasts which are developed from land capacity in the Clarence Valley region. The *Mid North Coast Regional Strategy* provides growth predictions to 2031. The traffic assessment for the *Preliminary Route Options Report* extends the population growth and

Issues raised	Submission no	Response
		traffic predictions to 2049, ie 30 years after the assumed date of opening of the new bridge. A 30 year planning horizon is considered suitable for this project and is consistent with the planning horizon adopted for comparable projects.
Concerns that industrial and population growth in the Clarence Valley and up the Summerland Way to Casino and Kyogle have not been adequately addressed in relation to the new bridge location.	27	Consultation with Clarence Valley Council, Richmond Valley Council and Kyogle Council was undertaken during the development of the *Preliminary Route Options Report – Parts 1 and 2*, with regards to a new crossing of the Clarence River at Grafton and land use planning and future development along the Summerland Way. Refer to Chapter 5.2.2 of the *Preliminary Route Options Report*. As part of this process, these Councils identified several documents which included current and future projects and land releases in various stages of development, for consideration in the *Preliminary Route Options Report.* This is discussed in Chapter 5.2.2 of the report. These developments and other potential developments will be followed and considered by the project team as part of the next stage of the process. The process to shortlist the preliminary options and identify a preferred option has been designed to be thorough and robust and, when completed, to provide the community with certainty about the location of the additional crossing. The process includes input from the community, technical investigations and a value management process. The following are being considered in conjunction with other studies: • Strategic plans such as the Far North and Mid North Coast Regional Strategies. • Land use planning by Clarence Valley, Kyogle and Richmond Valley councils. • Future Pacific Highway upgrades. • Major approved and potential development proposals such as the intermodal transport proposal at Casino and the Trans Regional Amalgamated Infrastructure Network proposal.
Concerned that the TRAIN project has not been fully considered, despite it remaining on Infrastructure Australia"s priority list.	27	The TRAIN proposal has been considered by the project team in the *Preliminary Route Options Report – Parts 1 and 2*. As identified in Chapter 5.2.2 of the report, the Trans Regional Amalgamated Infrastructure Network (TRAIN) proposal is one of 59 projects submitted for consideration and assessment in the June 2011 *Communicating the Imperative for Action* report to the Council of Australian Governments (COAG) by Infrastructure Australia. 47 of these projects, not including the TRAIN proposal, have been included in Infrastructure Australia's Infrastructure Priority List in the report. Six of the projects on the priority list (including the upgrade of the Pacific Highway) have been identified as 'Ready to Proceed' projects while an additional seven projects have been recommended for project development funding. The TRAIN proposal is not included on the Infrastructure Australia priority list. This proposal

Issues raised	Submission no	Response
		will be followed and considered by the project team during the next stage of investigations.
Concerns about key findings in PROR 2 different to 2003 Feasibility Study Report, including: • Impacts on community. • Need for more detailed studies. • Further community consultation. • Results of questionnaire/report 2003.	27	The information contained within the *Preliminary Route Options Report – Parts 1 and 2* and the community consultation associated with this (including community and business surveys), builds upon the work undertaken during the 2003/04 process, part of which is documented in the 2003 *Feasibility Study Report*. The 2003 *Feasibility Study Report* identifies the vicinity of the existing bridge as the most feasible location for an additional crossing. The report also identifies that options upstream to Susan Island and options downstream to Elizabeth Island should also be considered further. The report recommends that "further detailed traffic analysis, noise monitoring environmental investigations and community consultation would be required to determine the viability of an additional crossing in these locations." The process being undertaken to identify a recommended preferred route option, including detailed investigations and continuing community consultation, is consistent with the recommendations made in the 2003 *Feasibility Study Report*.
Grafton City would be best served by opening up the road network and providing an alternative access bypass route, across a wider road network, linking the Pacific Highway with the Summerland Way downstream on the outskirts of Grafton. This will greatly improve access and traffic efficiency for all users (local, north, south, east and west) into the future whilst preserving and maintaining the amenity and lifestyle of Grafton City.	36	The purpose of the current investigation is to identify an additional crossing of the Clarence River at Grafton to address short-term and long-term transport needs. The current investigations build upon the work undertaken during the 2003/04 process, part of which is documented in the 2003 *Feasibility Study Report*. The 2003 *Feasibility Study Report* identifies the vicinity of the existing bridge as the most feasible location for an additional crossing. The report also identifies that options upstream to Susan Island and options downstream to Elizabeth Island should also be considered further. The report recommends that "further detailed traffic analysis, noise monitoring environmental investigations and community consultation would be required to determine the viability of an additional crossing in these locations." The process being undertaken to identify a recommended preferred route option, including detailed investigations and continuing community consultation, is consistent with the recommendations made in the 2003 *Feasibility Study Report*. Traffic impacts, including access and efficiency, and social impacts, including amenity and lifestyle, will be taken into consideration when determining a recommended preferred option. These issues will be considered further during the detailed investigations of the short-list of route options, in order to provide the best possible balance across social, environmental, economic, engineering and cost issues.
Concerns to see that the RTA and NSW Government ensures the location for a second bridge is identified downstream of the existing bridge, outside the CBD and populated residential areas of Grafton and is linked with the Summerland Way from the Pacific Highway.	36	The purpose of the current investigation is to identify an additional crossing of the Clarence River at Grafton to address short-term and long-term transport needs. The current investigations build upon the work undertaken during the 2003/04 process, part of which is documented in the 2003 *Feasibility Study Report*. The 2003 *Feasibility Study Report* identifies the vicinity of the existing bridge as the most feasible location for an additional crossing. The report also identifies that options upstream to

Issues raised	Submission no	Response
		Susan Island and options downstream to Elizabeth Island should also be considered further. The report recommends that "further detailed traffic analysis, noise monitoring environmental investigations and community consultation would be required to determine the viability of an additional crossing in these locations." The process being undertaken to identify a recommended preferred route option, including detailed investigations and continuing community consultation, is consistent with the recommendations made in the 2003 *Feasibility Study Report*. Social impacts, including impacts on residential areas, and connections to the State road network, will be taken into consideration when determining a recommended preferred option. These issues will be considered further during the detailed investigations of the short-list of route options, in order to provide the best possible balance across social, environmental, economic, engineering and cost issues.
Concerns about the need to secure State and Federal Government funding to commence construction of a second bridge for Grafton as soon as possible.	36	The scope of the current project is to identify a recommended a preferred location for an additional crossing of the Clarence river at Grafton and preserve the route. Consideration of funding for construction of any new bridge is anticipated to occur after a preferred route option has been announced. Timing of construction will depend on funding availability. Once this is determined, the environmental assessment will start and planning approval for the preferred route will be sought.
Concerns to consider Federal and State Plans and Reports including • Infrastructure Australia Transport Plan and Priority List • The NSW State Transport Plan • The NSW Government Transport Blueprint 2011 • The RTA"s Network and Corridor Planning Practice Notes(Nov 2008) • The Mid North Coast Regional Strategy 2006-2031 • The Far North Coast Regional Strategy 2006-2031	36	While the *Preliminary Route Options Report – Parts 1 and 2* includes an overview of the relevant government policy and strategy documents, it does not include an exhaustive list of documents relevant to the investigations. The NSW 2021 Plan was released at similar timing to finalising the *Preliminary Route Options Report – Parts 1 and 2*. This document was considered in the development of the *Preliminary Route Options Report – Part 3*. The remaining listed documents have been considered in the development of the *Preliminary Route Options Report – Parts 1 and 2*. These documents, along with other RMS planning documents will continue to be considered during the detailed investigations of the short-listed route options in the next stage of the process. The process to shortlist the preliminary options and identify a preferred option has been designed to be thorough and robust and, when completed, to provide the community with certainty about the location of the additional crossing. The process includes input from the community, technical investigations and a value management process. The following are being considered in conjunction with other studies: • Strategic plans such as the Far North and Mid North Coast Regional Strategies. • Land use planning by Clarence Valley, Kyogle and Richmond Valley councils. • Future Pacific Highway upgrades. • Major approved and potential development proposals such as the intermodal transport

Issues raised	Submission no	Response
		proposal at Casino and the Trans Regional Amalgamated Infrastructure Network proposal. The Infrastructure Australia Transport Plan and Priority List has been considered in the development of the *Preliminary Route Options Report – Parts 1 and 2*. As identified in Chapter 5.2.2 of the report, the Trans Regional Amalgamated Infrastructure Network (TRAIN) proposal is one of 59 projects submitted for consideration and assessment in the June 2011 *Communicating the Imperative for Action* report to the Council of Australian Governments (COAG) by Infrastructure Australia. 47 of these projects, not including the TRAIN proposal, have been included in Infrastructure Australia's Infrastructure Priority List in the Communicating the Imperative for Action report to the Council of Australian Governments (Infrastructure Australia June 2011). Six of the projects on the priority list (including the upgrade of the Pacific Highway) have been identified as 'Ready to Proceed' projects while an additional seven projects have been recommended for project development funding.
Concerns about reports • Current social and environmental reports such as noise, vibration, pollution, flooding and hydrology, geotechnical, heritage, ecological etc are yet to be provided	36	All current information regarding noise, flooding, geotechnical issues, ecology, traffic and Aboriginal and non-Aboriginal heritage is contained in the *Preliminary Route Options Report – Parts 1 and 2* in Chapters 5, 6 and 7, as well as in the *Technical Papers* in Volume 2 of the report. This was released in October 2011 and is available on the project website. Due to the extent (and cost) of work required, flood modelling was not undertaken for the 25 preliminary route options. Flood modelling will be undertaken for the six short-listed route options. RMS has liaised with a local hydrologist in regard to this approach. The hydrologist will be provided with the opportunity to review the flood modelling for the short-listed options. Noise modelling will be undertaken for the six short-listed options. Vibration and air quality will also be considered for these options. Strategic traffic modelling has been undertaken for the 25 preliminary route options and is contained in the *Preliminary Route Options Report – Parts 1 and 2* and the *Technical Papers* in Volume 2 of the report. More detailed traffic modelling will be undertaken for the six short-listed options. RMS has considered issues of Aboriginal heritage in consultation with the Grafton-Ngerrie Local Aboriginal Land Council and the RMS Aboriginal heritage guidelines, and has consulted extensively with the Land Council and knowledge holders. Refer to Chapter 5.4 of the *Preliminary Route Options Report*, and Volume 2 – *Technical Paper: Aboriginal Heritage*. Aboriginal cultural heritage will be considered further during the detailed investigations of the short-list of route options.
• Clarence Valley Council"s LEP – important to consider the CBD, industrial, health, educational and sporting campuses, residential and growth areas		Clarence Valley Council"s LEP has been considered in the development of the *Preliminary Route Options Report – Parts 1 and 2*, as documented in Chapter 5.2.1, in particular land use and planning and future development. The industrial, health, educational and sporting campuses, residential and growth areas have been considered.

Issues raised	Submission no	Response
• Regional Integrated Transport Plan as part of 10 Big Ideas to Grow Northern Rivers (supported by the Federal Member for Page, Janelle Saffin MP)		Consideration of the LEP and consultation with Clarence Valley Council will continue during the detailed investigations of the short-listed route options in the next stage of the process. The Integrated Regional Transport Plan identified in the 10 Big Ideas to Grow Northern Rivers is considered relevant to the identification of a recommended preferred option for an additional crossing of the Clarence River. This document and the three issues considered in the Integrated Regional Transport Plan, will be considered in the next stage of the project during the detailed investigations of the short-list of route options.

Issue category: Project objectives

This category includes concerns around the consideration of project objectives in relation to other key studies – addressing earlier outcomes against the findings of the *Preliminary Route Options Report – Parts 1 and 2*.

Issues raised	Submission no	Response
Concerned that the PROR does not adequately address the objectives and priorities of existing strategies and plans, such as the NSW State Plan.	27	In response to community feedback, the project purpose and objectives were reviewed between May and July 2011. Community comment was sought during this time. The June 2011 community update confirmed the purpose and objectives moving forward and sough feedback on the supporting objectives. The project objectives remain the objectives displayed in the December 2010 community update. The existing strategies and plans that were considered as part of the *Preliminary Route Options Report – Parts 1 and 2* are discussed in Chapter 2 of the report. These documents, along with community input, will continue to be considered during the detailed investigations of the short-listed route options in the next stage of the process.
Concerns that the project purpose and primary objectives from the previous process in 2003/2004 have been altered.	27	In response to community feedback, the project purpose and objectives were reviewed between May and July 2011. Community comment was sought during this time. The June 2011 community update confirmed the purpose and objectives moving forward and sough feedback on the supporting objectives. The project objectives remain the objectives displayed in the December 2010 community update. The project purpose and objectives have been updated from the 2003/04 process to better reflect the needs of the project. The project purpose and objectives of this project were confirmed in the June 2011 Community Update and are discussed in the *Preliminary Route Options Report – Parts 1 and 2* in Chapter 2.3.
Concerns about providing and only partially quoting outcomes of some of the previous studies undertaken in 2003 and 2004 including: • Changes to project purpose and objectives.	27	The project purpose and objectives have been updated from the 2003/04 process to better reflect the needs of the project. The project purpose and objectives of this project were confirmed in the June 2011 Community Update and are discussed in the *Preliminary Route Options Report – Parts 1 and 2* in Chapter 2.3. The information contained within the *Preliminary Route Options Report – Parts 1 and 2* builds

Issues raised	Submission no	Response
• Identification of project objectives to be used in the assessment. • Identification of supporting objectives relevant to the assessment.		upon the work undertaken during the 2003/04 process. The *Preliminary Route Options Report – Parts 1 and 2* references the previous studies undertaken in that period (refer Appendix 1) and provides a brief summary of their key findings. The outcomes of the previous studies have been documented and considered.
Concerns about assessment results for options in Corridor 2. An error in the PROR states „minimise the impact on the social environment, including property impacts"–„option D would impact the highest number of properties" and then in contradiction states „option D would impact the least number of properties".	27	This typographical error has been noted and will be corrected in the final *Preliminary Route Options Report.*

Issue category: Community consultation

This category includes concerns about outcomes of the postal and business surveys and how they have been addressed in the *Preliminary Route Options Report – Parts 1 and 2*. This category also includes some concerns about representation at the community and stakeholder evaluation workshop and the process to identify a short-list of route options.

Issues raised	Submission no	Response
Concerned that the PROR does not provide information about the community consultation process re-commencing in December 2010 and the dates and outcomes of public meetings and the dates of community updates.	27	This information is referenced in the *Preliminary Route Options Report – Parts 1 and 2* in Chapter 3. This information is also available on the project website.
Concerns that only partial outcomes of the 2011 postal and business surveys were included in the PROR. Concerned that the RMS did not personally talk with business owners.	27	The outcomes of the 2010 postal survey and the 2011 telephone and business surveys are documented in reports that were released earlier this year and are available on the website. The *Preliminary Route Options Report – Parts 1 and* provides a summary of the reports in Chapter 3.2. In consultation with the Grafton Chamber of Commerce and Industry (GCCI) all businesses were invited to participate through advertising of the online business survey. RMS received 104 completed business surveys from business owners and managers. RMS continues to consult with the business community. Representatives from the GCCI, the freight transport and public transport industries participated in the community and stakeholder evaluation workshop held in November 2011.
At the March and June forums a majority of	27	There are many factors and many views amongst the community to consider in the

people indicated (by show of hands) a preference for a second bridge located out of town. Why is this not recorded and is the RTA taking this into consideration?		identification of a preferred location for an additional crossing of the Clarence River at Grafton. Community input is an important consideration for this project. The preferred route for the crossing of the Clarence River and any road connections will be selected by assessing which option represents the most appropriate balance between functional, social, environmental, engineering and cost factors. The documented project process is to identify the best option in each of the five corridors, then conduct more detailed investigations to identify a preferred location from this short-list of options, in consultation with the community. Community preferences for particular options have been captured from feedback received to date and from the postal, telephone and business survey results. This is available on the project website.
Request that the RTA hold public meetings as well as drop in information sessions so that community members can hear the views of other community members.	27	A mixture of community forums have been adapted throughout the project to provide opportunities for the community to interact and stay involved in the project. The project team will continue to review future community consultation activities.
Concerns about the final selection of the short-list and RMS having the power to overrule the community workshop outcomes. There needs to be a greater level of transparency and care taken to ensure the issues of the community are not overlooked or the community is misinformed.	34	The outcomes of the evaluation workshop as well as wider community comment and the technical investigations will help identify the short-list of options to go forward for further engineering and environmental investigations. The process to identify the short-list of options to be taken forward for further investigation is documented in the *Preliminary Route Options Report – Final*. Following an announcement on the short-list of options, further technical investigations will be undertaken to provide more detailed information on the relative performance of the options. Community comments will be considered at this time and, together with the investigations undertaken and the outcomes of a Value Management Workshop will input into the selection of the recommended preferred option. Feedback from the display of the recommended preferred option will be considered before a decision is made on the preferred location for an additional crossing of the Clarence River. Community involvement will continue throughout the process for selecting the recommended preferred location for an additional crossing.

Issue category: Environment

This category includes concerns about noise monitoring.

Issues raised	Submission no	Response
Concerns about noise monitoring. Why has noise monitoring on options and residences impacted not been carried out and	27	For the assessments undertaken for the *Preliminary Route Options Report – Part 2*, an assessment of the noise impacts across the entire Grafton road network (considered in the strategic traffic model) was made, based on the number of potential noise sensitive receivers

included in the assessment?		fronting roads with a doubling (or more) of traffic at 10 years after opening (2029). Traffic doubling is equivalent to an increase in noise of approximately 3dBA. This is the change in noise level considered noticeable to the human ear. Traffic doubling has been estimated from the strategic traffic model. The greater the number, the greater the negative impact of increasing noise to potential community and residential noise receivers. This discussed in Section 7.1.3 of the PROR, under the supporting objective: Minimise the impact on residential amenity, including noise, vibration, air quality etc. This measure provides a comparative indication of the relative performance of the options within each of the corridors, and is considered suitable for this stage of the project. Background noise monitoring has been conducted for the Grafton area and detailed noise modelling will be carried out on the short-list of route options, as part of the next stage of the process.
Noise impacts around Arthur St and Crown St areas (near the river) are under-represented in the report, due to new residential sub-divisions going in. Approved residential housing blocks should be included in the counts for noise impacts.	32	Detailed noise modelling will be carried out on the short-list of route options, as part of the next stage of investigations. Residential noise receivers considered in the assessment will include completed dwellings and dwellings approved at the time of announcement of the short-list of route options.
Concerns about Aboriginal archaeological potential. In the PROR Part 2 appendix 5 constraint mapping p.70, Aboriginal archaeological potential is considered high in Fisher Park, but has been omitted from Corridor 3, but is seen in the constraints maps 2 & 4.	27	This has been noted and will be corrected in the *Preliminary Route Options Report - Final.*
The Aboriginal cultural significance of Elizabeth Island and Great Marlow has not being adequately considered, and no bridge should pass over these areas.	34	RMS has considered issues of Aboriginal heritage in consultation with the Grafton-Ngerrie Local Aboriginal Land Council and the RMS Aboriginal heritage guidelines, and has consulted extensively with the Land Council and knowledge holders. Refer to Chapter 5.4 of the *Preliminary Route Options Report*, and *Volume 2 – Technical Paper: Aboriginal Heritage*. Aboriginal cultural heritage will be considered further during the detailed investigations of the short-list of route options.

Issue category: Community corridor and option preferences

This category includes community considerations relating to corridor and option preferences. The table below summarises the preferences expressed by the community in the feedback received on the *Preliminary Route Options Report – Parts 1 and 2.* These preferences, along with the issues raised above, will be considered by the project as part of the selection of the short-list of route options.

Community preferences	Submission no
Preference is for option J (Dobie St) – use of existing infrastructure and heavy vehicle route, ie existing road reserve and roundabouts – and J has	1

shorter river crossing therefore lower cost.	
North Street options are very costly, due to more infrastructure and road upgrades needed, ie larger, higher, longer bridge; floodplain viaducts, new roads back into town, large embankments.	1
Option L or 14 are best, as they keep traffic out of town.	2
A crossing out of town would be preferable; looking at the analyses so far it would seem to me option 14 in corridor 4 would probably be a viable compromise. It does involve upgrading Prince Street, but that is probably the best suited street in town to take increased traffic.	3
Corridor (1) none, Corridor (2) heritage LEP Plan for area and noise problems in conflict for any proposal. Corridor (3) proposal L at best if positioned further off Crown St and cemetery on Grafton side. Corridor (4) proposal 21 best with access on south side and best connection on north side. Corridor (5) proposal is best with similar benefits as 21 in corridor 4.	4
Corridor (1) none, Corridor (2) none, Corridor (3) L but go down North St and across to near Kirchner St ramp. Corridor (4) 21, Corridor (5) 15 but miss the recycling depot and naval cadet building (can go behind them).	5
Option A or B likely best option – lights at Villiers and Fitzroy would break up traffic on bridge into „pulses".	6
Please maintain focus on origin destination data and avoid out of town options. The current bridge corridor must be the location of a second crossing.	6
Options D, Villiers St to Bacon St leading to new bridge and existing flood wall on south bank. This would then take traffic to new proposed highway at Wells Crossing and also Villiers St links up with the Summerland Way.	7
Any crossing should be north of Bacon St and link into the Summerland Way.	8
For Corridor (3) options – no indications is given for the number of lanes for bridge option 12 or for option L. One is left to presume that these would be two lane bridges.	9
Corridor (1) none, Corridor (2) none, Corridor (3) L, Corridor (4) 21, Corridor (5) 15.	11
The corridors that would be the best for the future are 4 or 5. It is important to think of the future.	13
Corridor 2 has the best options to allow traffic to flow more efficiently, although these options do not remove heavy vehicles from the city centre. These options would still allow for ease of emergency vehicles to make their way across the river during peak hour times. Corridor 2 options would allow travellers from South Grafton/Waterview Heights/Coffs Harbour/Yamba/Maclean to utilise either the new or old bridge during times of congestion, especially if there is an incident on either bridge. Corridor 2 options should be made the preference.	14
Preference for route option 15.	15
The routes for a crossing that would minimise the disruption to the heart of the city, and be most helpful are 20, 21, M, 23, 25, 26.	17
The second bridge should be adjacent to or near the existing bridge, will allow utilisation of both bridges as one way traffic with the old bridge taking southbound traffic. Option 1 and C/D are the preferred locations, with option 10 as the most northerly option.	18
The only logical options are in corridors 3, 4, and 5, even if these options are more costly in the short term.	20
The additional bridge must be located relatively close to the existing bridge (Corridor 1 or Corridor 2), otherwise the overall goal of the project will	21

not be realised because local traffic will not avail itself of an additional bridge that is located outside the town precincts.	
Build a bridge close to the current bridge either up or downstream of the current one so that traffic is closer to the CBD. The best options to fulfil these requirements are either 10 or F.	22
Options 15 -21 – through traffic should bypass residential areas as far as possible.	23
Approaching the 25 options from a road network efficiency viewpoint, Corridors 4 and 5 should be dismissed, since the Benefit/Cost ratios of the options in these corridors are less than 1.0 and cannot justify construction. Corridor 3 options are not particularly attractive. Options K, 12 and L, with BCRs of 1.0 or less should not be further considered. Looking at Options 11 and J, they have BCRs of 1.5-1.6, and also suffer property affectation, based on the summary analysis undertaken, and hence are not attractive options. Corridors 1 and 2 have the best options, from a road network efficiency viewpoint. Options E and F, in Corridor 1 have the best options, from a road network efficiency viewpoint. Options E and F, in Corridor 1, have the highest BCRs, of 2.3-2.5, with moderate property affectation. In Corridor 2, Options 1, 8, .9 and 10 have more substantial property affectation than other options in this corridor. They might be discarded for this reason. The best two options in each of Corridors 1 and 2, are: Corridor 1 Options E and F Corridor 2 Options A and C.	26
It is mandatory that direct connections from both the south and the north of both centres (Sth Grafton/Grafton) are maintained. If the new bridge is to be part of this arterial bus route, then this one determining factor immediately cancels out preliminary options that have their origin to the east of Bent St on the southern side, or to the north of Fitzroy St on the northern side of the river. Every proposed crossing site downstream of, and including Corridor 2, Option 6 is unsuitable as a trunk corridor for public transport. In fact the further downstream the crossing is situated, the less suitable it becomes for public transport – exponentially. The options that remain are: Corridor 1 – Option F; Corridor 1 – Option E; Corridor 2 – Option 5; Corridor 2 – Option A; and Corridor 2 – Option B.	25
Option 21 then onto Option 15 via future extension.	28
Access to the new bridge should be opposite Centenary Drive then via route 21 corridor 4 through corridor 5 and merging with the Summerland Way to the North of the brewery complex. Corridors 1, 2, 3 are totally unacceptable and prohibitively expensive/disruptive.	29
The only sensible crossing for the new bridge is Dobie Street.	30
Preference for option 21	31
Preference is for Corridor 1 or 2 as these better connect and are shorter routes to the Grafton CBD from South Grafton	32
Corridors 1 or 2 are preferred by the Clarence River Yacht Club	33
This submission opposes any further consideration of options in Corridors 4 and 5	34
Preference for option from Centenary Drive to North Street. This passage way causes the least disruption to the CBD, and links the South side to the North, joining the Summerland way to the Pacific Highway and the Gwydir Hwy in times of floods and major accidents. It would eliminate all traffic problems up, down and across the river.	35
Preference expressed for downstream options on the outskirts of town, near Kirchner and North Streets (Corridors 4 and 5).	36

Summary of preferences expressed by the community in the feedback received on the *Preliminary Route Options Report – Parts 1 and 2*																								
Corridor	**Corridor 1**		**Corridor 2**										**Corridor 3**					**Corridor 4**				**Corridor 5**			
Option	**F**	**E**	**5**	**A**	**B**	**6**	**C**	**D**	**I**	**8**	**9**	**10**	**11**	**J**	**K**	**12**	**L**	**14**	**20**	**21**	**M**	**15**	**23**	**25**	**26**
Option preference	3	2	1	3	2	-	2	2	1	-	-	1	-	2	-	-	5	4	2	10	2	7	2	2	2
Corridor preference	4		5										2					4				4			
Total corridor and option preferences	**9**		**17**										**9**					**22**				**17**			

NOTES:

Submission number 4 notes option L with a refinement. This has been interpreted as a preference for option L.

Submission number 5 notes option L and 15 with refinements. This has been interpreted as a preference for option L.

Submission number 8 stating “north of Bacon St and link into the Summerland Way” has been translated to mean a preference for options L, 14, 15, 20, 21, M, 23, 25, 26.

Submission number 28 stating “Option 21 then onto Option 15 via future extension” has been translated to mean a preference for options 21 and 15.

Submission number 29 notes option 21 with a refinement. This has been interpreted as a preference for option 21.

Submission number 29 stating “Corridors 1, 2 and 3 totally unacceptable” has been translated to mean a preference for Corridors 4 and 5.

Submission number 30 stating “The only sensible crossing for the new bridge is Dobie Street” has been translated to mean a preference for Option J.

Submission number 34 stating “Not in Corridors 4 and 5” has been translated to mean a preference for Corridors 1, 2 and 3.

Submission number 35 stating “Crossing from Centenary Drive to North Street” has been translated to mean a preference for Options 14 and 21.

Submission number 36 expressing a preference for downstream options on the outskirts of town, near Kirchner and North Streets, has been translated to mean a preference for Corridors 4 and 5.