LONGFORD SHARED PATH – SINGLE STAGE BUSINESS CASE

PREPARED FOR GORE DISTRICT COUNCIL

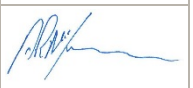
April 2019



Addendum to Longford Shared Path – Single Stage Business Case

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Rev. No.	Date	Description	Prepared By	Checked By	Reviewed By	Approved By
Final	10/05/19		M Flatters	S Connolly	R McCammon	R McCammon
						

1 Purpose

This addendum addresses comments made by the NZ Transport Agency to Gore District Council (GDC) in an email dated 16 April 2019 and subsequent requests from GDC as outlined in email GDC/Stantec dated 9 May 2019.

1.1 Alignment with the NZ Transport Agency's Investment Assessment Framework

To summarise, the Longford Shared Path projects meets the three of the 'High' criteria when assessed against the Investment Assessment Framework for the Walking and Cycling Improvements Activity Class, giving the overall investment a **High** Results Alignment:

GPS Priorities	Required for High Results Alignment	Assessment Against Criteria
Access to opportunities, enables transport choice and access, and is resilient – thriving regions	Supports increasing the uptake of children using walking and cycling especially to and from school	The high and intermediate schools are located to the west of the bridge in central Gore, and it is estimated that 178 students live in East Gore and travel to those schools. Completing the Longford Shared Path supports increasing the uptake of active modes for the school trip as it will be an attractive off-road facility. It anticipated that the new facility will increase active mode use from an estimated 15 current school age users to 63 school age users. The on-road sections to the school will also be completed. The scope of those works is to be confirmed in the next stage.
	Addresses a significant problem with the ability to use existing facilities including promotion, and use by people who identify as disabled and young people	When assessed using Austroads, the existing bridge facilities for cycling provide LOS D/E which is medium-high risk. Many cyclists use the footpath which creates risk for pedestrians. Footpaths are narrow and do not support use by disabled people. There are no pedestrian/cycle crossings in the vicinity and the high traffic volumes and high percentage of freight on the highway make this an issue for young people and disabled, who need more support when crossing.
Safety – a safe transport system free of death and serious injury	Addresses a high perceived safety risk to use of the mode	A community survey completed by GDC late 2018 had 59 responses, with 80% perceiving a safety issue with walking/cycling on the bridge, and 20% stating that bridge safety was satisfactory in its current form. 80% is a high perceived safety risk.

1.2 Response to NZ Transport Agency Comments

Reponses have been provided below to the Transport Agency comments. For clarity the Transport Agency comment precedes the response.

1.2.1 NZ Transport Agency Comment 1

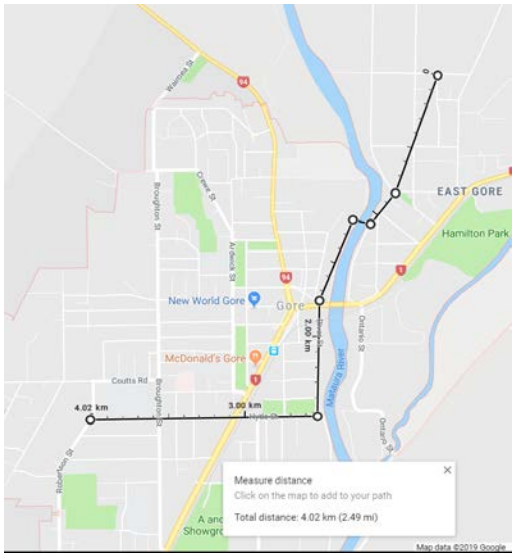
'To demonstrate the project addresses a significant problem with the ability to use existing facilities including promotion, and use by people who identify as disabled and young people then the project should include end-to-end journeys ie to school and other activities, however, the work could be programmed via the maintenance/LCLR programme and delivered to coincide with the completion of the project, but the costs as well as the benefits would need to be included in the analysis in this approach.'

Stantec Response

GDC have indicated that an additional $50k should be included in project costs to allow improvements to the route from the bridge crossing to the intermediate and high school area to facilitate end to end journeys. The scope of works required will be confirmed in the next stage.

Assessing the end to end journey from East Gore to the intermediate and high school area will increase the journey distance currently assessed in the economics. As a large proportion of the total benefits were derived from the health and environmental benefits of these trips, increasing the length of journey to the school's area (from 3km used for cycle trips to a revised value of 4km, refer diagram below based in GDC proposed cycle network), will also increase the benefits to all school users.

The increase in benefits from this additional journey length more than offsets the $50k increase in cost associated with the improvements along the route over the assessment period.



1.2.2 NZ Transport Agency Comment 2

'The consultants have used the Austroads guide for LoS, but acknowledge a small shoulder is provided on the bridge (500mm). I would've thought an end-to-end journey LoS assessment would also be useful, and those key highway crossing points need to be addressed. It may be possible to demonstrate a significant LoS gap and therefore justify as HIGH providing the project addresses those issues.'

Stantec Response

The current LOS assessment did identify a significant LOS gap, with a LOS of D-E, giving a medium-high risk rating for cyclists based on existing provision. An end-to-end journey LOS assessment has not been completed to date. Significant LOS gaps would be identified and addressed during the detailed design stage. This method will confirm the improvements required and their expected cost.

1.2.3 NZ Transport Agency Comment 3

'Significant as opposed to addresses an identified problem implies a reasonable number of people are affected. We know there are about 760 commuter trips to and from East Gore each day based on the data provided. We also know about 117 kids are aged between 13-18 years. Count information is important to get an accurate baseline of current users (and therefore helpful for estimating existing user benefits from the provision of an improved LoS) and for quantifying potential new users when perceived safety information and other research/survey data is considered. Also, ideally, should include travel to school information. The analysis is saying that 430 out of 760 commuter/school trips would be active mode users i.e. about 57%?!! These numbers do not appear realistic, and particularly given the strategic cycle network outlined is yet to be delivered.'

Stantec Response

The 760 commuter trips referenced above are one-way trips across the bridge derived from census data. The census only collects information on commuter journeys and school, shopping and recreational trips will be additional to these. These commuter trips are also likely to be comprise two crossings of the bridge to complete a daily journey doubling the 760 above. The percentage calculation in the comment is not correct. The justification and calculation of future users is outlined with the SSBC in section 18.1.2.

1.2.4 NZ Transport Agency Comment 4

'To demonstrate the project addresses a HIGH perceived safety risk the survey methodology is unclear. Tim Hughes from the Transport Agency has done some work in this space with consultants but admittedly this information wasn't available to the consultants for this project at the time. We would still like to see the survey information categorised into proportions of people who perceived or didn't perceive significant safety issues. We know the sample size was 159 people. Is there any demographic information, and how does this relate to the responses they gave?'

Stantec Response

From the survey that GDC completed in late 2018, the following key information has been extracted.

- 55 people responded
- 80% of respondents perceive a safety issue with walking and cycling on the bridge
- 20% of respondents did not perceive a safety issue
- No demographic information provided to Stantec from GDC

The survey results can be summarised as follows:

	Perceived a safety issue	Did not perceive a safety issue	TOTAL
Number of respondents	44	11	55
Percentage	80%	20%	

This supports a High results alignment under Safety 'addresses a high perceived safety risk to use of the mode'.

1.3 Update and Comments on Economic Assessment

Stantec believe that the economics are aligned with the EEM and would be happy to discuss the approach taken with an NZ Transport Agency peer reviewer.
To align with GDC's agreement to reduce the project cost to $4m*, a further sensitivity analysis has been undertaken on the economics that considered the following two scenarios:

- Scenario 1 - Reducing the overall project cost to around $4m with no change to the existing and future users or journey travelled
- Scenario 2 - Reducing the overall project cost to around $4m and only considering the benefits associated only with school journeys between East Gore to the school's area.

Rather than reproduce the economics in full, changes to the inputs and resulting BCR ratios for these scenarios have been provided. Full calculations are available to support these scenarios.

NB: An assessment of the viability of delivering the project for a project cost of $4m, and what the reduced scope would be, has not been undertaken but should be completed.

Scenario 1 – Reduced project cost

- Total project base estimate for the Option 15 (SSBC Section 18.2 and Appendix H.6) = $4.0m
- Discounted project cost for Option 15 (SSBC Section 18.2 and Appendix H.8) = $3.6m
- Revised BCR for Option 15 (SSBC Section 18.3 and Appendix H.8) = **4.19.**

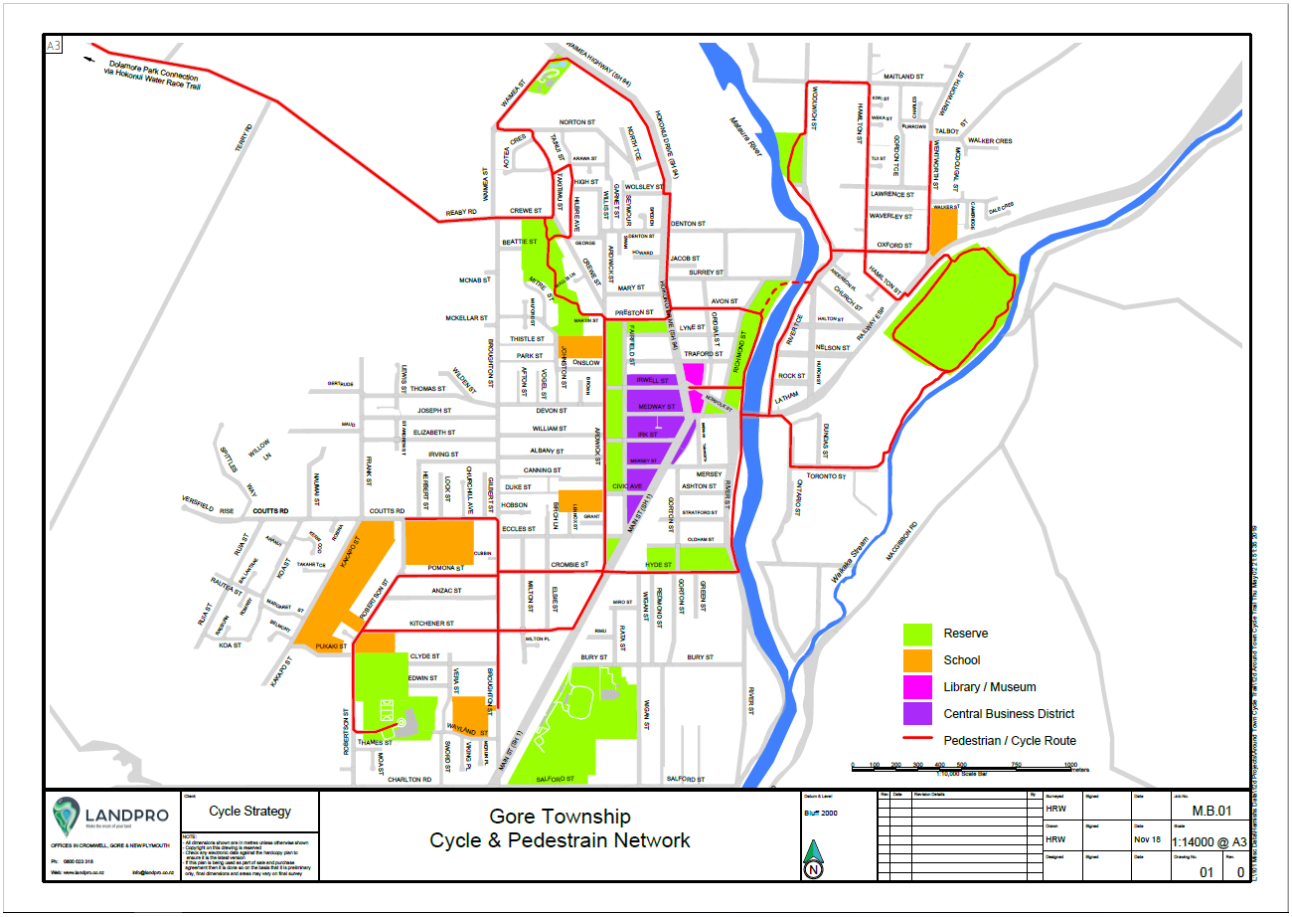
Scenario 2 – Reduced project cost and only considering benefits for school children only

- Total project base estimate for the Option 15 (SSBC Section 18.2 and Appendix H.6) = $4.0m
- Existing cyclists (Appendix H.1) = 15 (reduced from 39)
- Future cyclists (Appendix H.1) = 63 (reduced from 115)
- Existing pedestrians (Appendix H.1) = 64 (no change)
- Future pedestrians (Appendix H.1) = 25 (reduced from 100)
- Existing cyclists route length (Appendix H.1, H.3 and H.4) = 8 km (increased from 6 km)
- Future cyclists route length (Appendix H.1, H.3 and H.4) = 8 km (increased from 6 km)
- Revised BCR for Option 15 (SSBC Section 18.3 and Appendix H.8) = **1.90.**

The above assessment shows that, even with a reduced project cost and benefits limited to school users, the project will provide long term benefits.

1.4 GDC Updated Cycle Network Map

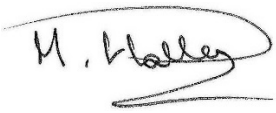
The Gore Cycle Network map below, supplied by GDC, should replace the those currently shown in the Executive Summary and Figure 2-6.



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REVISION SCHEDULE

Rev No.	Date	Description	Signature or Typed Name (documentation on file)			
			Prepared by	Checked by	Reviewed by	Approved by
1	11/9/18	Draft Part A for internal review	JF	SC	SC	MF
2	14/9/18	Draft Part A for client review	JF	SC	SC	MF
3	20/9/18	Final Part A	JF and CM	SC	SC	SC
4	17/01/19	Draft report for external review	MF	SC and JF	SC	DE
5	4/02/19	Final draft	MF/SC	SC	SC	PP
6	29/3/19	Final draft for issue	SC	SC	SC	RMcC

Executive Summary

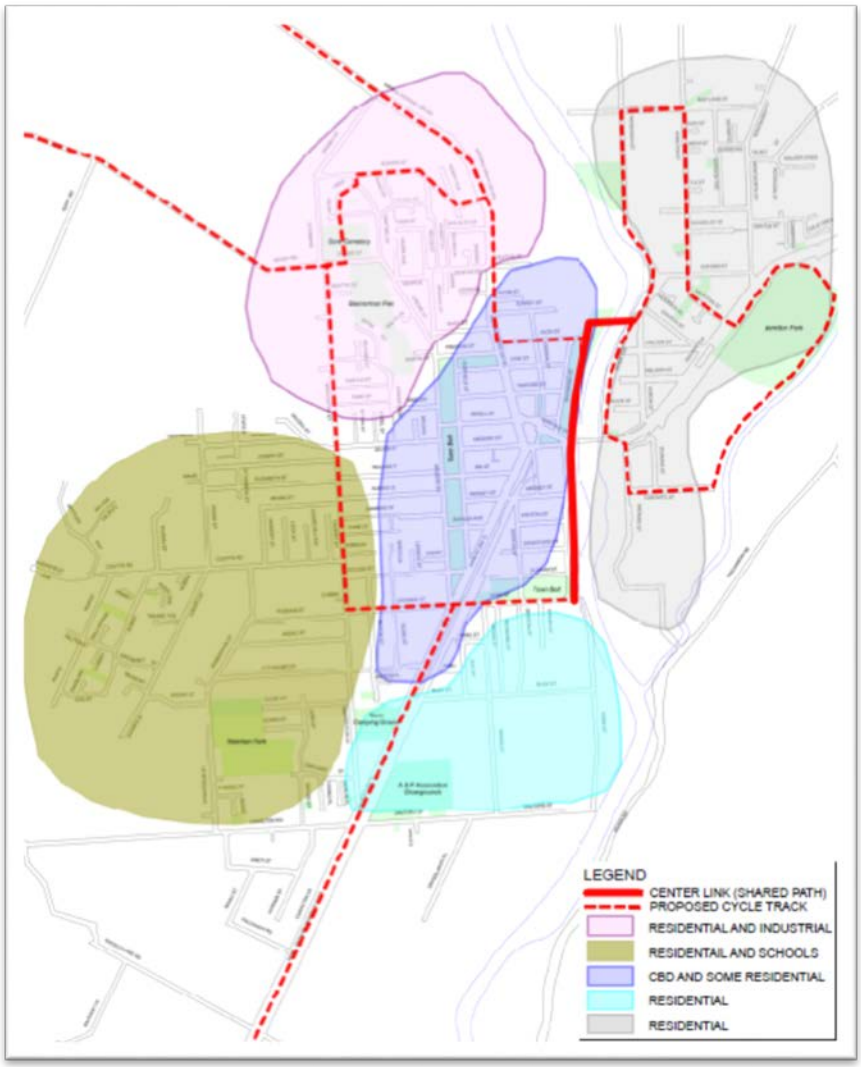
The Gore District Council (the Council) adopted the Southland Cycle Strategy (2016-26) in 2018. The strategy intends to unlock and strengthen social connections through the uptake of cycling. Provision of an active travel network in Gore has the potential to be highly successful, given its compact nature, favourable topography and mild climate.

The main barriers to increasing the uptake of cycling in Gore are severance and safety. The arterial transport routes dissect the town, which mean that any walking or cycling trip requires people to interact with state highway traffic. The real and perceived safety risk of crossing or moving along these major roading corridors, particularly at the SH1 Mataura River Bridge (which presents a medium-high safety risk) reduces the uptake of active travel.

There is a strong community desire to embrace more active modes of travel. This is proven by feedback from the community, the activities of dedicated cycle volunteers, and clear direction from elected members.

Gore Cycle Network

A cycle network and implementation programme (Appendix A) has been developed to address the problems of safety and severance. The network was developed by assessing the different land uses in each part of the township and using census travel demand data to identify desire lines between these areas. This analysis demonstrated the importance of connections between residential areas, the CBD, intermediate/high schools and the multi-sports complex. The following cycle network was identified:



The network includes establishing a high-quality primary cycle route between East Gore and Gore, as shown on the map ('center link (shared path)'). This link is the most important part of the network as it will provide a connection between East Gore and jobs, schools, shopping and sports facilities in Gore. As a shared path providing a new river crossing, it will provide a step change in provision of safe walking and cycling connections and is expected to make the most significant contribution to encouraging mode shift. Because of the importance of this route to the overall network and impact on behaviour change it will be constructed first. The remainder of the network can then be scheduled with future planned maintenance and renewal programmes to optimise costs.

This report presents the Single Stage Business Case for investment in this primary cycle route – the Longford Shared Path.

Alignment with Government Policy Statement (GPS)

Completing the primary cycle route aligns closely with the Government Policy Statement for Land Transport (GPS) by:

- Increasing the uptake of children walking and cycling, especially to and from school (all intermediate and high schools are in Gore);
- Addressing a high perceived safety risk for commuters, disabled and young people travelling to school;
- Enabling a modal shift from private motor vehicles to active modes;
- Strengthening social and cultural connections;
- Improving liveability in the CBD areas and realising the wider benefits; and
- Providing further economic growth for Gore.

Problems, Benefits and Opportunities

A stakeholder and investment logic mapping workshop in August 2018 identified the following problems, benefits and opportunties relating to the provision of the primary cycle route:

Problems	1. Inadequate active mode infrastructure connecting Gore and East Gore is resulting in a real and perceived safety risk for people using active modes. 2. Access between Gore and East Gore is constrained by the SH1 bridge, its approaches and poor levels of service for cycling and walking, leading to low rates of active travel to school, work and other activities, and reducing recreational opportunities for tourists and locals.
Benefits	• Minimise risk to public safety – improve safety for active modes. • Increased numbers of people who cycle and walk for travel in Gore. • Improved access between Gore and East Gore.
Opportunities	• Improved resilience. • Improving liveability of Gore. • Economic growth. • Strengthening social and cultural connections.

The main active mode link between East Gore and Gore is currently provided by the SH1 bridge over the Mataura River. Cycle facilities on the existing SH1 bridge were assessed using Austroads which indicated Level of Service D-E and a medium to high risk road environment. There are narrow footpaths on the bridge which are used by pedestrians and some cyclists who are concerned about interacting with state highway traffic. This lack of suitable infrastructure results in a real and perceived risk, which supresses the number of people using active modes. This was supported by a public survey which showed people were concerned about using active modes on the bridge.

Option Assessment

A long list of 20 options were identified at an NZ Transport Agency/Council staff meeting where participants were encouraged to think broadly about solutions. A multi-criteria analysis was completed which assessed each option against the Investment Objectives and other agreed criteria. This allowed three options to be short listed for the primary cycle route. These options made the greatest contribution to the Investment Objectives and scored highest against the assessment criteria. These three options were

presented to stakeholders, including the Mayor, Council Chief Executive Officer, and the NZ Transport Agency team, at a second workshop. These stakeholders supported the two options for the primary route which would involve construction of a new pedestrian and cycle bridge, and discounted the option which would provide clip-on facilities on the existing bridge. A clip-on facility was not supported because:

- The route is not on the desire line and does not align with the cycle network strategy.
- It would not drive behaviour change and increase cyclist numbers, because cyclists would still interact with high volumes of state highway traffic, including freight.
- Cyclists would still need to use the intersections in the vicinity of the bridge which include roundabouts, which do not currently provide for cyclists.
- It does not enable any of the wider project opportunities to be realised, such as providing an alternative route or added network resilience.

The two remaining options – a new crossing aligning with either Surrey Street or Rock Street – were subject to further technical and economic benefit assessment. This suggested the bridge location on the Surrey Street alignment as the recommended option, with a 73m bridge span, single approach span and ramps, compared to a Rock Street location with a 94m bridge span and two approach spans, with benefit to cost ratios of 3.25 and 3.07 respectively.

Recommended Option: Pedestrian/cycle bridge at Surrey Street

The scope of the recommended option is:

- A 3m wide pedestrian/cycle bridge crossing of the Mataura River on the Surrey Street alignment, comprising a 73m single span bridge, a 21m side span on the east side and a structural and earthworks ramp on the west.
- A 3m wide concrete path with streetlighting to provide connections from the bridge to the wider network. On the east side of the bridge, a 260m long path will traverse the top of the stopbank adjacent to Huron Street. On the west side of the bridge a 280m path will follow Surrey Street and Richmond Street paper roads to connect to Avon Street.

Total cost (including design): $4.6 to 6.7m, with an initial estimate of $5.15m.

BCR: 3.25, which is a medium cost-benefit appraisal rating[1].

The prefered option provides a significant increase in the level of service of cycling, with an improvement from D-E to B (Austroads). It is expected to generate an additional 430 trips per day by active modes.

Note: The remainder of the route providing connection to the schools and other destinations was not included as this will be constructed using low cost treatments such as parking adjustments, painted lines, crossing treatments and sharrows as appropriate (refer Appendix C).

The Council has an approved budget of $1.12m for this project. It is expected that the Transport Agency will co-invest at the targetted financial assistance rate of 77.5%. Otherwise, the Council will need to look for other funding opportunities which will mean the project will need to be deferred, which will cause a significant delay in implementing the project and further development of the town. The Council are ready to progress this project immediately. Support is demonstrated by the inclusion of the project in the Long Term Plan, which has been consulted on with the community, and there is strong support from elected members. The cycle network development programme demonstrates a commitment to completing the overall network as well as this critical link.

This is a key infrastructure project for Gore, which supports the Council's goal for growth articulated in Gore- Ready for Growth. The project holds broad appeal due to the popularity of the river area, the identified need for increased walking and cycling opportunities and the Council's Rural City Living brand. Moreover the project aligns strongly with the Government Policy Statement for Land Transport (GPS). An assessment against the NZTA Investment Assessment Framework shows a high results alignment because the investment will:

- Address a real and perceived safety risk
- Address a significant problem with the ability to use existing facilities including promotion, and use by people who identify as disabled and yound people
- Increase uptake of children using walking and cycling, especially to and from school

[1] Investment Assessment Framework Decision Making Information Sheet – NZ Transport Agency, June 2018

- Enable a modal shift from private motor vehicles to active modes

Comparison of recommended option against Investment Objectives:

Investment Objective		Assessment	Alignment Against Investment Objectives
1	Increased numbers of people who cycle and walk for travel in Gore.	The new structure would be located on a desire line between East Gore and Gore, linking to a wider cycling network. The new bridge will be safer than the existing SH bridge and attract additional users. The location of the bridge is expected to attract recreational users.	Increase of: • 230 new cycle trips per day • 200 new pedestrian trips per day • **Total:** 430 new trips by active modes
2	Minimise risk to public safety – improve safety for active modes.	Feedback from a public survey showed that a large number of residents have safety concerns when using the existing bridge. The new independent structure will provide a traffic free 3 m wide crossing of the Mataura River, improving safety for all active mode users.	Overall Level of Service improvement from existing Level D to Level B
3	Improved access between East and West Gore.	At present only one crossing of the Mataura River exists. The new structure will provide an additional, more attractive alternative for pedestrian and cyclists improving access between East and Gore.	Improvement to the relative attractiveness of the route from 1.0 to 1.84 (when considered with pedestrian/cyclist network against EEM Table SP11.1)

Next Steps

The Council will seek support for this business case and financial assistance for the project from the NZ Transport Agency's National Land Transport Programme 2018-21. Subject to the outcome of this process, the Council's strategy for implementation is:

- NZ Transport Agency funding application review and approval – April to May 2019
- Develop specimen design and prepare tender documents for a construction contract - April to July 2019
- Planning and engagement with the stakeholders and the wider community – April to July 2019
- Final Council approval for implementation of the project – July 2019
- Tender for detailed design and construction, separate contracts – July to September 2019
- Detailed design and construction – September 2019 to September 2020
- Implement the remainder of the cycling network programme (refer to Appendix A) based on the available maintenance budget - ongoing

Gore District Council

Longford Shared Path – Single Stage Business Case

CONTENTS

Executive Summary i
Gore Cycle Network i
Alignment with Government Policy Statement (GPS) ii
Problems, Benefits and Opportunities ii
Option Assessment ii
Recommended Option: Pedestrian/cycle bridge at Surrey Street iii
Next Steps iv
1. Introduction 1
1.1 Purpose 1
1.2 Background 1
1.3 Study Area 1
Part A: The Case for Investment 3
2. Context 3
2.1 Social and Economic 3
2.2 Environmental 5
2.3 Transport 5
2.3.1 Cycle Network Strategy 6
2.3.2 Primary Cycle Route 8
2.3.3 Key Problem with Primary Cycle Route 9
3. Key Stakeholders 10
4. Problems 11
4.1 Problem 1: Safety 11
4.1.1 Cause 11
4.1.2 Effect 14
4.1.3 Consequence 15
4.2 Problem 2: Access 16
4.2.1 Cause 16
4.2.2 Effect 16
4.2.3 Consequence 18
5. Benefits 19
6. Opportunities 20
6.1 Resilience 20
6.2 Improving the liveability of Gore 20

6.3 Economic Growth 20
6.4 Strengthen Social and Cultural Connections 20
7. Investment Logic and Benefit Maps 21
8. Constraints 23
8.1 Existing SH1 Bridge 23
8.2 Area north of the State Highway Bridge 24
8.3 Regional Water Plan (operative) 25
9. Strategic Alignment 26
9.1.1 Local 26
9.1.2 Regional 26
9.1.3 National 27
10. Summary and Next Steps 28
Part B(i): Identifying the Recommended Option 30
11. Long List Option Development 30
11.1 Do Nothing (Base Case) (Option 1) 30
11.2 Do Minimum (Option 2) 30
11.3 Online Longlisted Options 31
11.4 Offline Longlisted Options 34
11.5 Combination Options 38
11.6 Connections to existing Network 39
12. Assessment Criteria and Scoring 40
13. Long List Assessment 42
13.1 Overview of Key Aspects 42
13.1.1 Active Mode Participation Investment Objective 42
13.1.2 Safety Investment Objective 42
13.1.3 Access Investment Objective 42
13.1.4 Technical Criterion 43
13.1.5 Consentability Criterion - Property 43
13.1.6 Operational/Maintenance Criterion 44
13.1.7 Financial Criterion 44
13.1.8 Customer/Stakeholders Criterion 44
13.1.9 Natural Environment Criterion - Planning and Environmental Screen 44
13.1.10 Urban Design Criterion 44
13.1.11 Wider Effects Criterion 45
13.1.12 Strategic Fit Criterion 45
13.1.13 Economic Criterion 45
13.2 Scoring 45
13.3 MCA Results 46
14. Short-Listed Options 51
15. Shortlist Consultation 52
16. Scope of Short-Listed Options 53

16.1 Option 14: A new pedestrian and cycle bridge at Rock Street, around 100m upstream from the existing crossing 53
16.2 Option 15: A new pedestrian and cycle bridge at Surrey Street, about 600m upstream from the existing crossing 53
16.3 Shared Path Connections 54
17. Short List - Further Technical Assessment 55
17.1 Connections to existing and proposed pedestrian and cycling networks 55
17.2 Structural Considerations - General 55
17.3 Structural Requirements – Seismic 55
17.4 Structural Requirements – Geotechnical 55
17.5 Resource Consenting 56
17.6 Ecological 56
17.7 Cultural 56
17.8 Land Ownership 56
17.9 Hydrological 56
17.10 Urban Design 57
17.11 Financial 57
17.12 Final MCA Scores for Short List 57
18. Value for Money 59
18.1 EEM assessment 59
18.1.1 Existing Users 59
18.1.2 Future Users 59
18.1.3 Benefits 60
18.1.4 Safety 60
18.1.5 Travel Time 61
18.1.6 Health and Environmental Benefits 61
18.1.7 Total Benefits 61
18.2 Costs 61
18.3 Benefit-Cost Ratio 62
18.4 Sensitivity Analysis 62
18.5 Wider benefits 62
19. Recommended Option 63
Part B(ii): Recommended Option 64
20. Recommended Option Design 64
20.1 Longford Shared Path - Scope 64
20.2 Structural Form 64
20.3 Cost estimate 64
20.4 Benefit Cost Ratio 64
21. Option Risks 66
21.1 Technical 66
21.2 Operational 66
21.3 Financial 66

21.4 Stakeholder/public 66
21.5 Environmental and Social 66
21.6 Safety 66
21.7 Economic 67
22. Recommended Option: Outcomes Assessment 68
22.1 Results Alignment 68
22.2 Assessments Against Investment Objectives 68
22.3 Cost-benefit Appraisal 69
23. Financial Case 70
23.1 Indicative Project Delivery Costs 70
23.2 On-Going Maintenance and Operations 70
23.3 Project Timing 70
23.4 Collaboration and Funding Options 70
23.5 Financial Risk 70
Part C: Commercial and Management Case 71
24. Implementation Strategy 71
24.1 Technical Approach - Preliminary Design/Pre-Implementation 71
24.2 Stakeholder Engagement 71
24.3 Risk Allocation and Transfer 71
24.4 Project Governance 72
24.5 Project Management and Delivery 72
24.6 Communications and Engagement 72
24.7 Procurement of Implementation Stage 72
24.8 Assurance and Acceptance 74
24.9 Cost Management 74
24.10 Issue Management 74
24.11 Assumptions and Uncertainties 74

LIST OF TABLES

Table 3-1: Key stakeholders 10
Table 10-1: Summary table 28
Table 12-1: Investment Objectives and Assessment Criteria 40
Table 13-1 - Assessment Results (those short listed are highlighted in green). 46
Table 18-1: Existing Bridge Users 59
Table 18-2: Summary of Current, New and Future Active Mode Users Crossing the River 60
Table 18-3: Short Listed Option BCR's 62
Table 20-1: Sensitivity testing of Option 15 65
Table 22-1: Results Alignment 68
Table 22-2: Assessment Against Investment Objectives 68
Table 23-1: Indicative project delivery costs 70

Table 24-1: Commercial Risk Management 72
Table 24-2: Project Team 72
Table 24-3: Delivery Model Options 72

LIST OF FIGURES

Figure 1-1: Potential Crossing Location (Source: Base Map: Google Maps) 2
Figure 2-1: Scope area and indicative locations of trip generators (Base map source: Google Earth) 3
Figure 2-2: International Visitors to NZ 4
Figure 2-3: Gore District Tourist Expenditure 5
Figure 2-4: Gore Arterial Transport Network, Daily Traffic Volumes and Heavy Vehicle Percentage 6
Figure 2-5: Land use and travel demand in Gore (provided by the Council, 2019) 7
Figure 2-6: Gore proposed cycle network (provided by the Council, 2019) 8
Figure 2-7: View of the SH1 bridge over the Mataura River. Note narrow footpaths and no cycle facilities. 9
Figure 2-8: Cyclist using carriageway - SH1 Mataura River Bridge (image provided by the Council) 9
Figure 4-1: Safety Level of Service Rating (indicative assessment) 12
Figure 4-2: Cycle Facility Choice Tool (indicative assessment) 13
Figure 4-3: Active mode safety issues on the bridge (Base map source: Google Earth) 15
Figure 4-4: Gore Proposed Cycle Network 17
Figure 7-1: Investment Logic Map 21
Figure 7-2: Benefit map 22
Figure 13-1: Property Data Map (Source: LINZ) 44
Figure 14-1: Shortlisted Options 51
Figure 16-1: Full extent of proposed Shared Path river network, and Longford Shared Path 54
Figure 17-1: Final MCA Assessment 57
Figure 24-1: Predominant land use in Gore (map provided by the Council) 6
Figure 24-2: Core connections required to support an integrated cycle network in Gore (image provided by the Council) 7

APPENDICES

Appendix A Gore Cycle Strategy Implementation Programme
A.1 East Gore Track: School Route, Commuter, Recreation
A.2 West Gore Track: School Route, Commuter, Recreation
A.3 Reaby Road: Connection Between Gore and the Hokonui Track
A.4 Mataura Track: Connection Between Gore and Mataura
A.5 Manderville Track: Connection Between Gore and Manderville
Appendix B Council Public Survey Response Summary
Appendix C Cycle Network Development
Appendix D MCA Assessment Matrix
Appendix E Stakeholders Feedback on Shortlisted Options
Appendix F Short List Options

Appendix G Cost Estimates for Concept Designs
Appendix H Economics
H.1 Base Data
H.2 Form SP11-7
H.3 Form SP11-4
H.4 Form SP11-5
H.5 Benefits
H.6 Cost Estimates
H.7 Timestream
H.8 Benefit Cost Ratio
Appendix I LOS Comparison
Appendix J Proposed Delivery Schedule

1. Introduction

1.1 Purpose

This report presents the Single Stage Business Case for investment in the Longford Shared Path. Part A discusses the problems, benefits, investment objectives and opportunities that were identified and discussed by the study team and key stakeholders at the Problem Definition workshop. It presents the evidence in support of the problems and investigates the case for investment. Recommendations are made for the next steps, based on the available evidence. Part B presents the process used to identify the recommended option and provides a technical assessment and details of the recommended option. Part C presents a plan for implementation.

1.2 Background

The Longford Shared Path will provide the primary cycle route for Gore, connecting East Gore and Gore, and providing a central spine for connections to the remainder of the proposed network (refer to Appendix A). It will enable a step change in the provision of safe walking and cycling connections between East Gore and essential goods and services (e.g. jobs, schools, shopping) which are primarily located on the other side of the Mataura River, in central Gore. In addition, providing a new active mode connection will provide additional recreational opportunities and access to the river, both for residents and visitors.

The project supports the Council's goal for growth, articulated in Gore – Ready for Growth, as it will offer economic and liveability benefits. It will also enable the Council's Tourism Impact Statement, which recognises that Gore District is emerging as a tourism destination and aims to strengthen Gore's destination attractiveness and regional position through implementation of four tourism focussed projects which have the potential to increase the number of guests who stay overnight. The 'Bridge Project' and the 'Riverside Project' are two of the identified projects which closely align with the Longford Shared Path. The Bridge Project refers to the new active modes crossing that is a key element of the Longford Shared Path, and The Riverside Project is a plan to revitalise the river area, which includes the Longford Shared Path as well as other, broader, improvements to revitalise the river area. The Longford Shared Path Project is therefore fundamental to achieving the Council's aspirations for economic growth in Gore.

The Gore Transport Activity Management Plan includes a focus on making Gore more cycle friendly and creating a network of tracks, particularly for children travelling to school and to support children learning to ride. The Gore District Trails Feasibility Study outlined feasibility assessments of Gore and East Gore trails. The assessment for the East Gore trail stated that "a trail would also be constructed under the road and rail bridge so that the trail users could avoid crossing SH1". However, this did not indicate how the river would be crossed, if at all.

The Gore District Council Long Term Plan 2018-28 includes $1.2m towards the cost of this project, and the project has been included in the Regional Land Transport Plan (2018). The Council are keen to progress this project and in July 2018, a Point of Entry report titled "River Track – Point of Entry" was completed by Stantec, for discussion with the Transport Agency. It identified the key access and safety problems for pedestrians and cyclists moving between Gore and East Gore, along with opportunities related to this investment which included a new river crossing. At this meeting the Transport Agency confirmed that the project should proceed to a Single Stage Business Case.

1.3 Study Area

The study area is located in Gore, in the Southland Region. Gore is located approximately 2 hours' drive south west of Dunedin, and an hour drive north of Invercargill. Figure 1-1 shows an indication of a possible location of a new river crossing, which was identified in the Gore District Trails Feasibility Study.

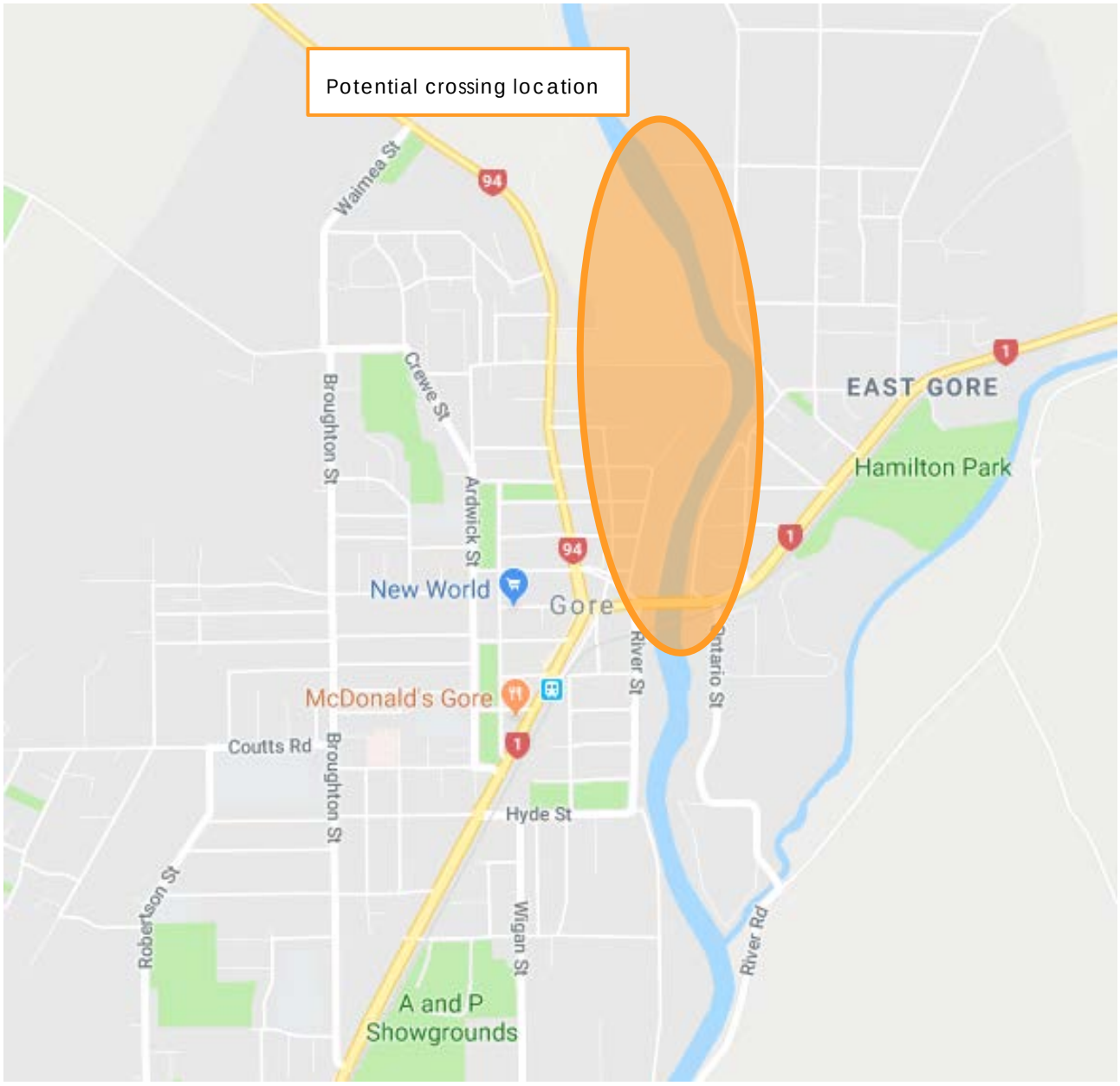


Figure 1-1: Potential Crossing Location (Source: Base Map: Google Maps)

Part A: The Case for Investment

2. Context

2.1 Social and Economic

Gore is a town home to around 10,000 people[2] and straddles the Mataura River in Central Southland. Most of the town is set on relatively flat land on either side of the river. The majority of commercial land use, most of the schools, and the hospital are situated on the western side of the river (Figure 2-1). This commercial core is roughly bounded by a green belt, outside of which land use is predominantly residential.

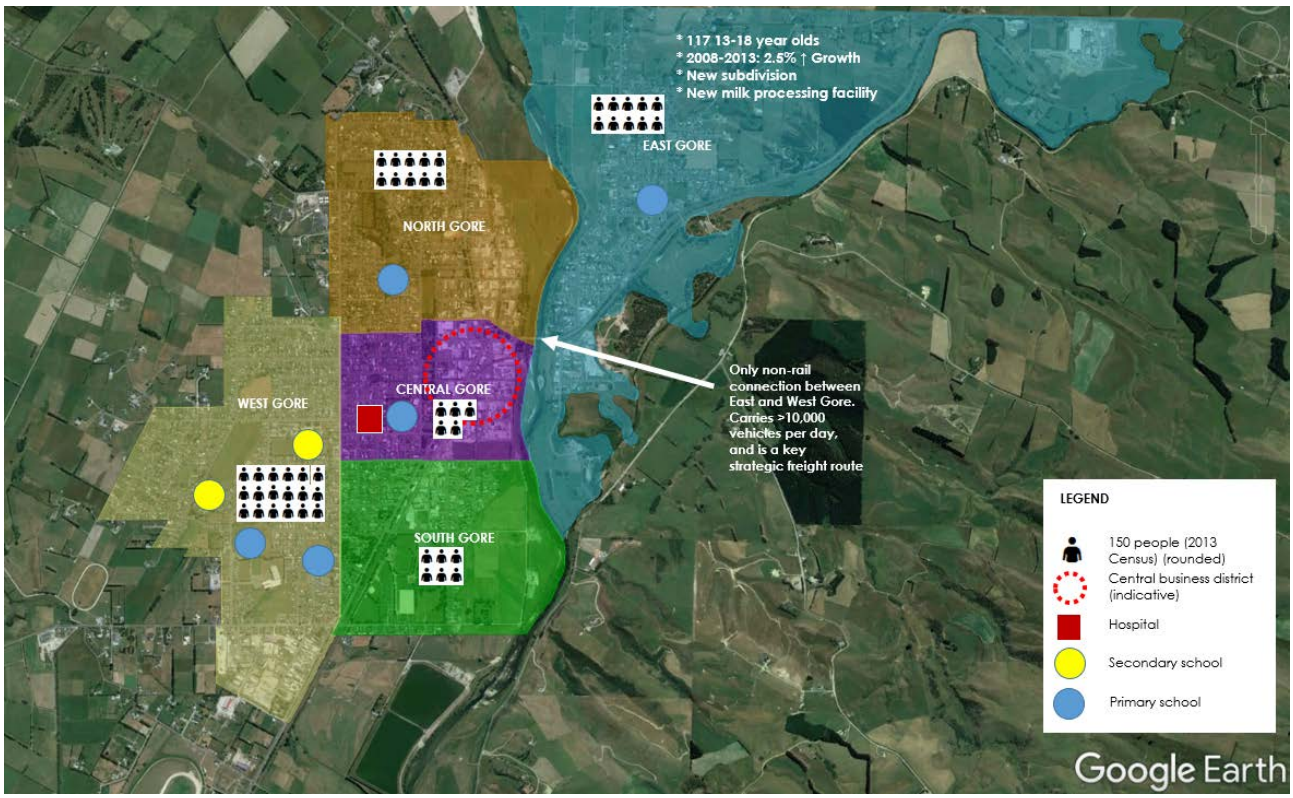


Figure 2-1: Scope area and indicative locations of trip generators (Base map source: Google Earth)

In 2013 the median age of Gore District was 42.9 years; slightly older than the Southland median (39.6 years) and the national median (38 years). The median personal income in Gore District in 2013 was $28,800, marginally higher than the national median of $28,500, but marginally lower than the Southland median of $29,500[3]. The majority of people identify themselves as New Zealand European (88.1%)[4].

In 2017, Gore had an estimated population of just under 10,000 people[5]. In 2013 1,449 people lived in the East Gore area unit[6], of which1,449 about 8% (117[7]) were aged 13-18 years old (high school age).

The District "...has a capital value of $2.6 billion with a strong agricultural-led economy"[8]. The town has key industries as a result such as meat and milk processing facilities. "The Mataura River has world class fishing and its tributaries has earned the District the title of World Capital of Brown Trout Fishing. Gore's large brown trout statue is a national icon and photographed by thousands of tourists each year. Gore is also the New Zealand Capital of Country Music, hosting the New Zealand Gold Guitar Awards and the New Zealand

[2] Source: http://archive.stats.govt.nz/infoshare/ViewTable.aspx?pxID=5bb1bffe-6722-4fea-9337-db76f380a0bf
[3] http://archive.stats.govt.nz/StatsMaps/Home/People%20and%20households/2013-census-quickstats-about-a-place-map.aspx
[4] http://archive.stats.govt.nz/StatsMaps/Home/Ethnicity/2013-Census-map-European-ethnic-groups.aspx
[5] Source: http://archive.stats.govt.nz/infoshare/ViewTable.aspx?pxID=5bb1bffe-6722-4fea-9337-db76f380a0bf
[6] Source: http://archive.stats.govt.nz/StatsMaps/Home/People%20and%20households/2013-census-population-dwelling-map.aspx
[7] http://nzdotstat.stats.govt.nz/wbos/Index.aspx?DataSetCode=TABLECODE7548&_ga=2.196305892.932386805.1536180482-1127082241.1515959452#
[8] https://www.goredc.govt.nz/our-district/district-information/

Country Music Awards during a week-long festival around Queens Birthday Weekend"[9]. The river within the study area is a popular fishing spot.

Recently there have been several new developments proposed in or near to East Gore. In August 2018 the Mataura Valley Milk Processing Plan opened in McNab[10], with 70 jobs provided initially and more recruitment expected in early 2019. Matai Ridge residential development[11] is proposed, which will provide about 40 dwellings (although the timeframe for this is uncertain as the project has been put on hold[12]). The Council is proposing to construct an eco-park further south along the river. Council is developing a Spatial Plan, and as part of this work, has identified a further area suitable for residential zoning in East Gore.

The growth in tourism in New Zealand over the last three years has exceeded all forecasts. Numbers of visitors are shown in Figure 2-2. Tourism is now New Zealand's largest export earner, overtaking the dairy industry in 2015/16. Forecasts by MBIE predict that there will be 4.9 million international visitors by 2023.

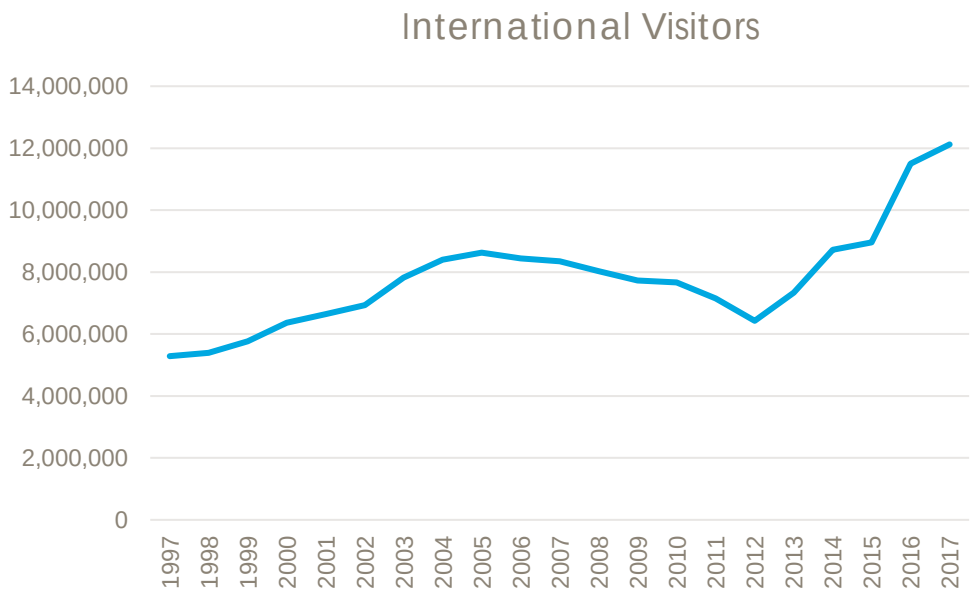


Figure 2-2: International Visitors to NZ

The monthly Regional Tourism Estimates[13] show an ongoing increase in the tourist spend within the Gore District. This increasing trend is shown in Figure 2-3. The 2013 census shows that the number of jobs in the tourism sector in Gore has remained relatively steady. The Council are keen to stimulate the local tourist sector to ensure that Gore is able to make the most of the increase in visitors to New Zealand. The Gore District's development strategy Ready for Growth complements this and sets its picture of success at growing visitor spend in the District from $77 million a year to $100 million. Improving the existing river crossing supports this strategy.

[9] https://www.goredc.govt.nz/our-district/district-information/
[10] Source: https://www.stuff.co.nz/business/farming/dairy/101046088/mataura-valley-milk-shakes-up-the-southland-dairy-industry
[11] Source: http://www.matairidge.nz/
[12] https://www.goredc.govt.nz/your-council/news/subdivision-project-shelved/
[13] Annual Tourism Estimates for RTO, Monthly Regional Tourism Estimates, Ministry of Business, Innovation and Employment

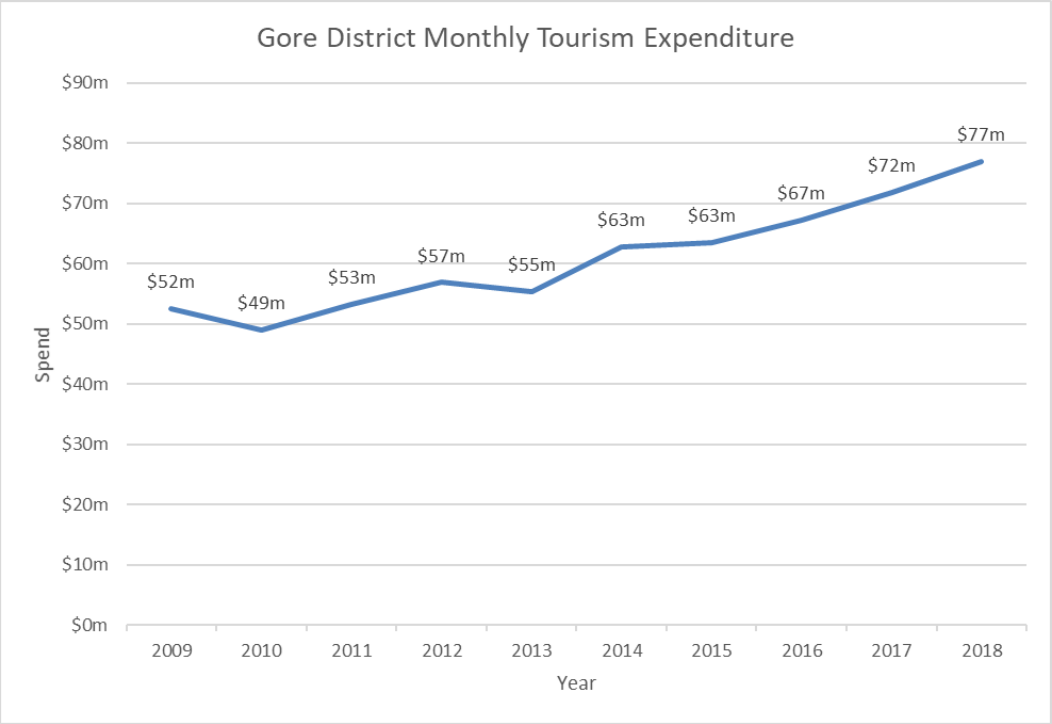


Figure 2-3: Gore District Tourist Expenditure

To help grow the tourism sector in Gore, the Council have adopted a Tourism Impact Statement which recognises that Gore District is emerging as a tourism destination and aims to strengthen Gore's destination attractiveness and regional position through implementation of four tourism focussed projects which have the potential to increase the number of guests who stay overnight. The 'Bridge Project' and the 'Riverside Project' are two of the identified projects and are the subject of this business case – noting that the Riverside Project includes broader riverside revitalisation initiatives as well as the Longford Shared Path. The Longford Shared Path Project is therefore fundamental to achieving the Council's aspirations for economic growth in Gore.

2.2 Environmental

The study area encompasses the floodplain, stopbanks, and road network on either side of the Mataura River. The floodplain is relatively flat grassland and trees.

2.3 Transport

The town generally has a grid transport network composed of roads; many of which have facilities for pedestrians. There are currently no specific cycle facilities within Gore Township, however a network of cycle trails is under development. State Highway 1 and 94 intersect roughly in the middle of Gore and these roads provide the main access in and out of the town. The Main South Line (railway) is located roughly adjacent to State Highway 1 (to the south).

Figure 2-4 shows the main routes in and out of Gore and their ADT (as of December 2017), as well as the percentage of heavy vehicles in the traffic stream, which is high, particularly on the SH1 bridge where heavy vehicles make up 13% of the traffic. These arterial routes present severance to active modes, due to the traffic volumes, heavy vehicles, noise, speeds and difficulty crossing. They also detract from the enjoyment of walking and cycling, present safety concerns and deter people from walking and cycling.

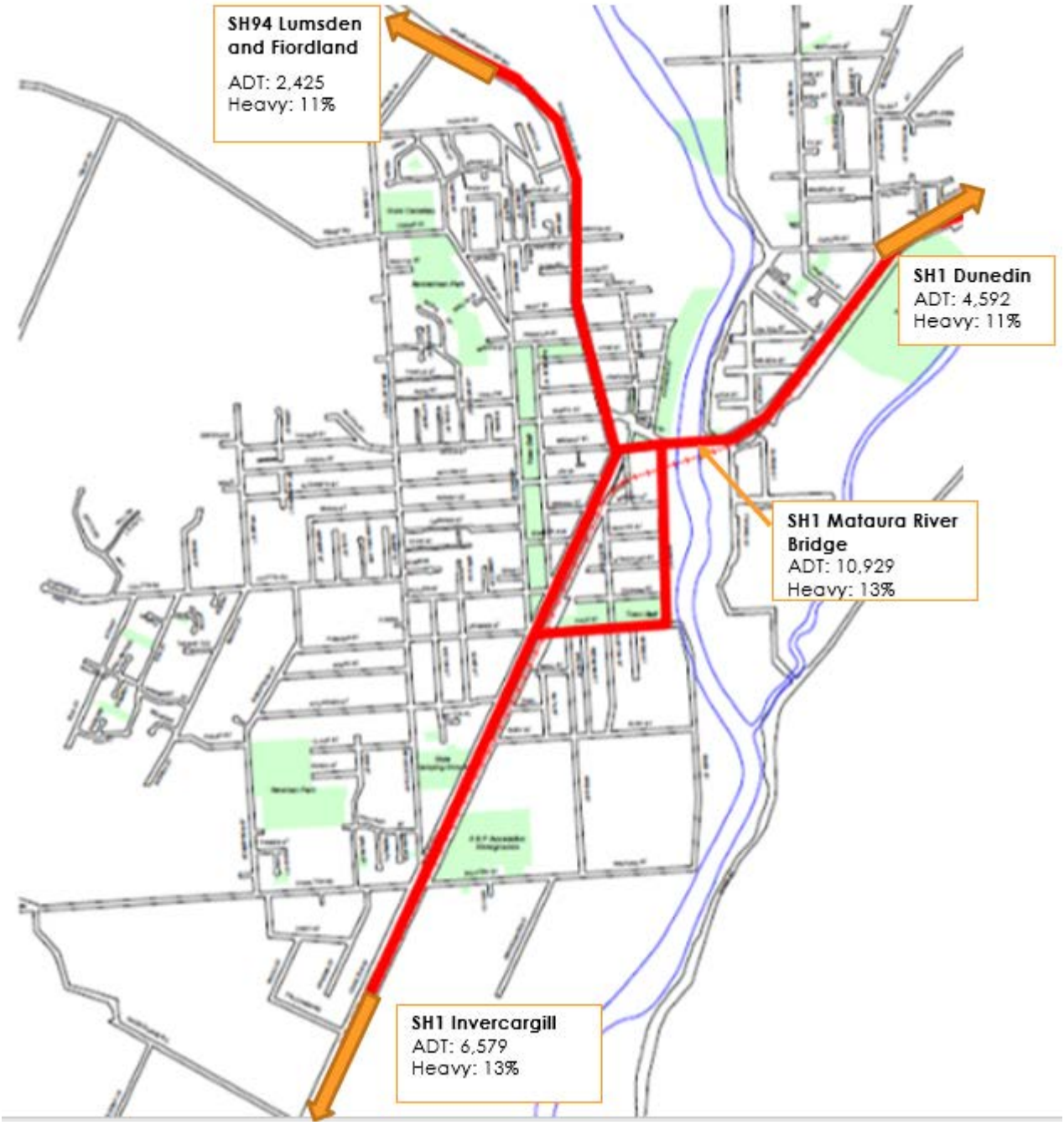


Figure 2-4: Gore Arterial Transport Network, Daily Traffic Volumes and Heavy Vehicle Percentage

2.3.1 Cycle Network Strategy

The Council adopted the Southland Cycle Strategy in 2018. The strategy intends to unlock and strengthen social connections through the uptake of cycling. Provision of an active travel network in Gore has the potential to be highly successful, given Gore's compact nature, favourable topography and mild climate.

The main barriers to increasing the uptake of cycling in Gore are severance and safety. The arterial transport routes dissect the town, which mean that any walking or cycling trip requires people to interact with state highway traffic. The real and perceived safety risk of crossing or moving along these major roading corridors, particularly at the SH1 Mataura River Bridge (which presents a medium-high safety risk) reduces the uptake of active travel.

There is a strong community desire to embrace more active modes of travel. This is proven by feedback from the community (see Appendix B), the activities of dedicated cycle volunteers, and clear direction from elected members. A proposed cycle network has been developed which recognises the different land uses in each part of the township and used census travel demand data to identify desire lines. This

analysis demonstrated the importance of connections between residential areas, the CBD, intermediate/high schools and the multi-sports complex as shown in Figure 2-5.

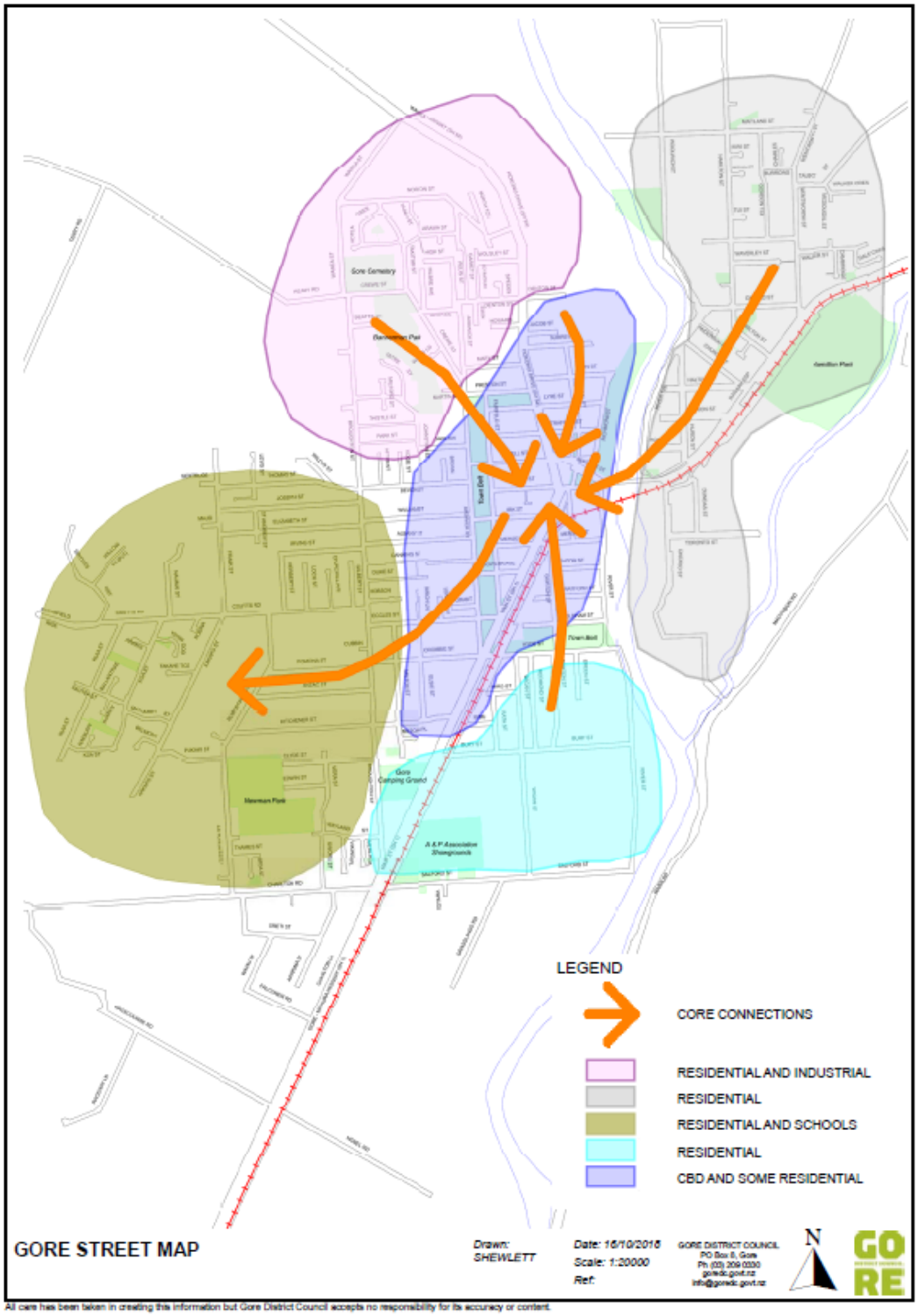


Figure 2-5: Land use and travel demand in Gore (provided by the Council, 2019)

A cycle network and implementation programme (Appendix A) has been developed to address the network problems of safety and severance. The network was developed by assessing the different land uses in each part of the township and using census travel demand data to identify desire lines between these areas (Appendix C). This analysis demonstrated the importance of connections between residential areas, the CBD, intermediate/high schools and the multi-sports complex. This allowed a cycle network to be identified as shown Figure 2-6.

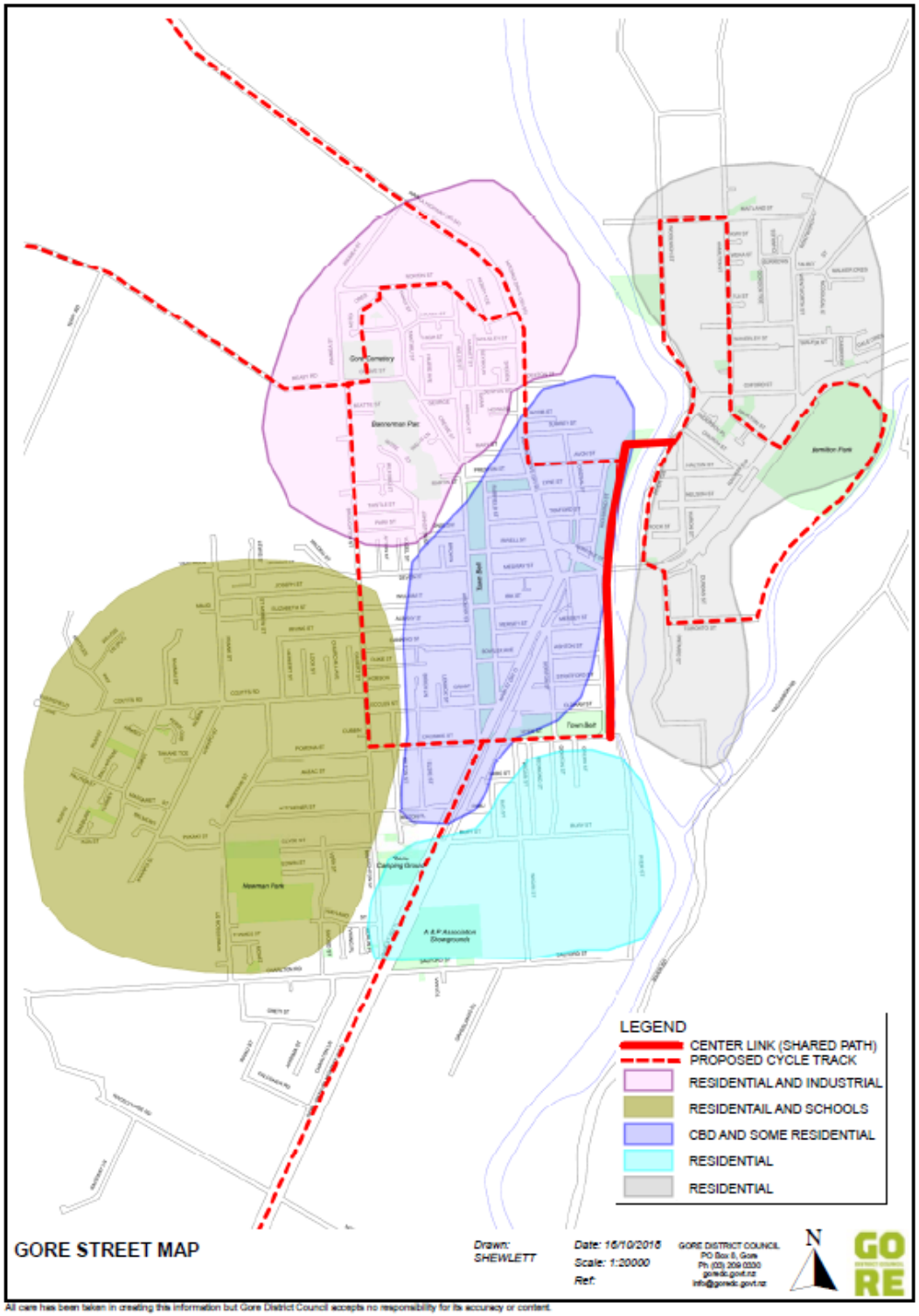


Figure 2-6: Gore proposed cycle network (provided by the Council, 2019)

2.3.2 Primary Cycle Route

The proposed cycle network map shows a high-quality primary route between East Gore and Gore. This will be developed as a shared path, to allow for all active mode users. Establishing this high-quality primary cycle route between East Gore and Gore will connect key origins and destinations. The remainder of the network can then be scheduled with future planned maintenance and renewal programmes to optimise costs.

2.3.3 Key Problem with Primary Cycle Route

The main problem relating to the primary cycle route is the provision for cyclists on, and in the vicinity of, the SH1 Mataura River bridge crossing (see Figure 2-7). This provides the only connection between East Gore and the rest of Gore, including the CBD, high schools and healthcare. The existing bridge does not provide facilities for cyclists and subsequently many cyclists use the narrow footpaths, which brings them into conflict with pedestrians. Some cyclists use the carriageway, as shown in Figure 2-8. Concern has been raised by the community that the approaches on either side of the bridge present a safety risk due to the number of intersections and restricted available sight distance.



Figure 2-7: View of the SH1 bridge over the Mataura River. Note narrow footpaths and no cycle facilities.[14]



Figure 2-8: Cyclist using carriageway - SH1 Mataura River Bridge (image provided by the Council)

[14] Source: https://www.argonautltd.co.nz/roadrunner/

3. Key Stakeholders

As part of the Single Stage Business Case, a facilitated workshop was held in August 2018 with key stakeholders to:

- Present background information;
- Develop the problem statements, benefits and themes for investment objectives; and
- Capture opportunities

The stakeholders invited to participate in the workshop are shown in Table 3-1, along with their roles and responsibilities.

Table 3-1: Key stakeholders

Key Stakeholders	Roles, Responsibility, and Goals
Gore District Council (GDC)	GDC "delivers services, facilities and projects following the direction set by elected members"[15]
Environment Southland (ES)	Environment Southland "Environment Southland is responsible for the sustainable management of Southland's natural resources – land, water, air and coast – in partnership with the community."[16] They are responsible for the provision of public transport services in the region.
NZ Transport Agency (the Transport Agency)	The Transport Agency are the road controlling authority for the State Highway network.
New Zealand Police (NZP)	New Zealand Police is working with the community to make New Zealanders be safe and feel safe. They operate by land, sea and air, actively preventing crime and crashes.[17]
Venture Southland	"Venture Southland is the Economic Development Agency for Southland, delivering a wide range of initiatives, services and events to promote and grow the region alongside Southland communities"[18]
Cross Road Cycles	Cross Road cycles are a cycle business based in Gore, offering sales service.[19]

[15] https://www.goredc.govt.nz/your-council/council-business/
[16] https://www.es.govt.nz/council/about-council/Pages/default.aspx
[17] Text adapted from http://www.police.govt.nz/about-us/nz-police/overview
[18] http://venturesouthland.co.nz/
[19] https://www.crossroadcycles.co.nz/

4. Problems

At the workshop, the project team and stakeholder panel identified and agreed the following key two problem areas:

- **Problem 1 –** Safety
- **Problem 2 –** Access

Based on the problem areas, issues identified at the workshop as well as the background evidence collection, the project team developed the following problem statements:

- **Problem 1 – Safety:** Inadequate active mode infrastructure connecting Gore and East Gore is resulting in a real and perceived safety risk for people using active modes
- **Problem 2 – Access:** Access between Gore and East Gore is constrained by the SH1 bridge, its approaches and poor levels of service for cycling and walking, leading to low rates of active travel to school, work and other activities, and reducing recreational opportunities for tourists and locals

The subsequent sections explain the two problems in more detail. Each problem is assessed in the following manner:

- The **cause** of the problem – what are the main causes which contribute to the problem?
- The **effect** of the problem – to road users, ease of access, commercial activity, the surrounding environment etc.
- The **consequence** of the problem – what are the health, environmental and economic effects created by the problem?

4.1 Problem 1: Safety

STATEMENT: INADEQUATE ACTIVE MODE INFRASTRUCTURE CONNECTING GORE AND EAST GORE IS RESULTING IN A REAL AND PERCEIVED SAFETY RISK FOR PEOPLE USING ACTIVE MODES (60%).	
Cause(s)	• High traffic volume on SH1. • High proportion, and predicted growth, of freight movements. • Limited, and below standard crossing options. • Road geometry restricting available sight distance westbound approach • An intersection is located near both ends of the bridge, and more intersections located nearby. • Limited bridge carriageway width. • Poor level of service connections for cyclists and pedestrians at either end of the bridge (intersection, crossing facilities etc).
Effect	• People perceive cycling and walking between Gore and East Gore as unsafe.
Consequence	• People who choose to use active modes between Gore and East Gore are exposed to an unacceptably high safety risk.

4.1.1 Cause

4.1.1.1 Traffic Volume

The 2017 traffic flow count at the eastern end of the bridge was 10,929 vehicles per day; 1,421 (13%) of which were heavy vehicles[20], which is high There was an annual average growth of traffic of 1.1% at this count site between 2013 and 2017. If this growth rate continues over the following 5 years, then this section of road will cater for about another 618 vehicles per day (including 80 more heavy vehicles per day) by the end of 2022.

4.1.1.2 Traffic Composition

The section of highway forms part of the important freight journey between Timaru and Invercargill[21]. This means that there is often potential conflict between cyclists and heavy vehicles on the bridge.

[20] Source: https://www.nzta.govt.nz/resources/state-highway-traffic-volumes/
[21] Source: Otago-Southland RLTP 2018-2021 (p15).

Heavy vehicle movements are predicted to grow in Southland between 2012 and 2042. The draft South Island Freight Plan forecasts Southland's freight task will grow by 6.1 million tonnes between 2012 and 2042. It is anticipated that the bulk of the growth expected will be driven by; liquid milk, aggregate, general freight fertiliser, limestone and cement[22]. This will likely mean there will be an increase of heavy vehicles using this section of SH1, increasing exposure to cyclists.

4.1.1.3 Safety of Existing Infrastructure Elements

Currently the cycle provisions, average motor vehicle speed (assumed to be at the posted speed limit), and motor vehicles per hour (peak hour assumed as about 10% of the AADT), result in a safety level of service rating of D - E[23] for cyclists (refer Figure 4-1). Level of service E is described in Austroads Level of Service framework and worksheet for network operation planning as a medium to high risk road environment. It should be noted, however, that this is indicative given the presence of a sealed shoulder; bicycles do not strictly share a kerbside lane.



Figure 4-1: Safety Level of Service Rating[24] (indicative assessment)

Austroads also provides guidance on the type of facility that is appropriate given the parameters of traffic volume and 85th percentile vehicle speeds (refer to Figure 4-2 below[25]). This shows that given the assumed parameters[26] the most appropriate facility for cyclists is one which is physically segregated (during peak hour). Some sensitivity should be assumed with the 85th percentile speed given as it will vary depending on proximity to the roundabout at the western end of the bridge, however the preferred separation will likely remain as physical segregation. TomTom data indicates that 85th percentile speed for westbound vehicles is around 49-54kph depending on the position on the bridge.

[22] Draft South Island Freight Plan
[23] Note this is somewhat dependant on more precise average vehicle speeds, and exactly where the measurement is taken from – for example lower vehicle speeds would be expected to negotiate the roundabout at the western end of the bridge, however on the eastern end vehicle speeds would likely be significantly higher. TomTom westbound data indicates 50th percentile speeds ranging from 41 km/h to 48 km/h depending on position on bridge.
[24] Jensen, SU 2007, 'Pedestrian and bicyclist level of service on roadway segments', *Transportation Research Record,* no. 2031, pp. 43-51. retrieved from https://nzta.govt.nz/walking-cycling-and-public-transport/cycling/cycling-standards-and-guidance/cycling-network-guidance/cycle-network-and-route-planning-guide/process/evaluating-cycle-route-options-and-facility-type/
[25] Sustrans 2014, Sustrans design manual: handbook for cycle-friendly design, Sustrans, viewed 10 November 2016, <http://www.sustrans.org.uk/sites/default/files/file_content_type/sustrans_ handbook_for_cycle-friendly_design_11_04_14.pdf>. (retrieved from Cycling Aspects of Austroads Guides, 2017)
[26] Peak hour vehicle movements assumed as about 10% of the AADT - roughly 1,100 vph. 85th vehicle speeds will vary on proximity to the roundabout at the western end of the bridge. The Planning and Policy Manual States that where the 85th percentile is not known that 10kph above the posted speed limit (50kph) should be assumed for the purposes of assessing the required sight distance for accesses/intersections.

Figure C8 1: Guidance on the separation of cyclists and motor vehicles for the preferred bicycle route

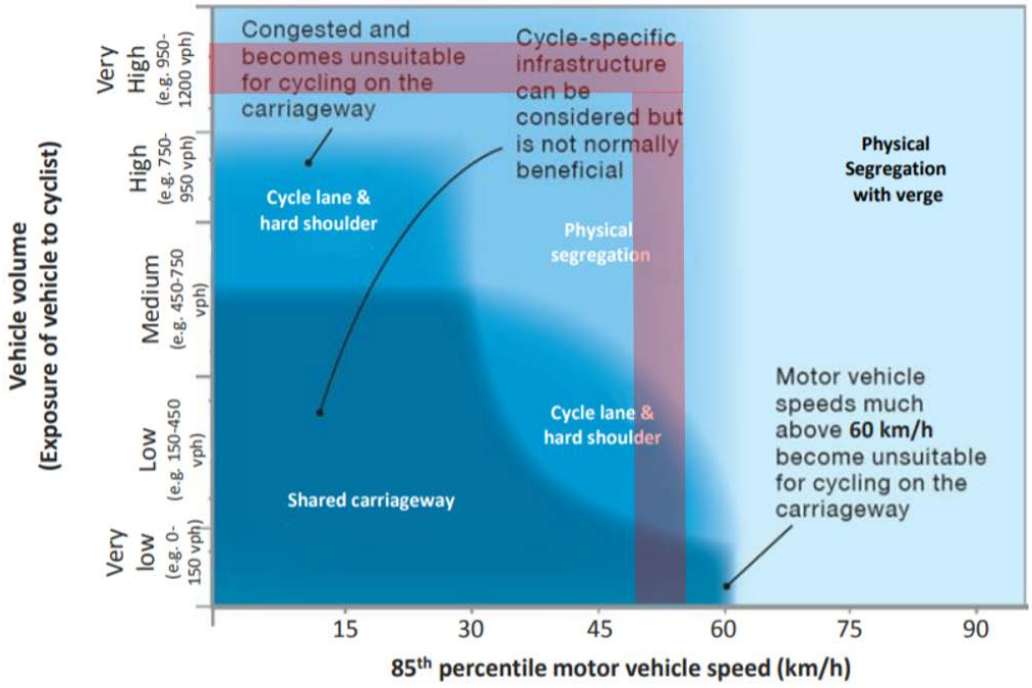


Figure 4-2: Cycle Facility Choice Tool (indicative assessment)[27]

Research by Dill and McNeil (2012) in the City of Portland suggests that people (of the entire city) can be categorised in Portland[28] in relation to their approach to cycling. They were as follows:

- Strong and fearless: 6%
- Enthused and confident: 9%
- Interested but concerned: 60%
- No way, no how: 25%

Strong and fearless riders are described as requiring little specific cycle provision, while enthused and confident prefer to have some space on the roadway when roads are busy (formal or informal provisions). There is currently little provision for cyclists over the bridge; except about 500mm of sealed shoulder space, with no 'bail out' option due to the presence of the pedestrian fence. Therefore, the types of cyclists who will most likely be using the facility represent 6-15% of Gore's population (at best).

The section of SH1[29] has an infrastructure risk rating (IRR) of 2.06, which equates to a medium risk band. It is noted that this rating extends from the SH94/SH1 intersection to the Nelson Street/SH1 intersection and is typically used more as an infrastructure rating for vehicles. There is no KiwiRAP star rating for this section.

Austroads outlines the envelope to provide satisfactory clearance between cyclists and heavy vehicles[30]. There should be a minimum separation of 0.2m allowed between the cyclist and an adjacent fence (though 0.5m is desirable), 1.0m for the operating width of the bicycle and rider, and 1.0m minimum (on 60kph posted speed limit areas[31]) between the cyclist and adjacent vehicle movements. In total this is requires 2.2m, as a minimum, of space for cyclists and buffer.

[27] Source: Sustrans (2014) obtained from Cycling Aspects of Austroads Guides, 2017

[28] Research by Pettit and Dodge (2014), whilst having a different classification system, found that 76% of people in Wellington would cycle if safe, separate infrastructure were provided; this suggests that the equivalent 'no way, no how' bracket for Wellington is 24% of the population – this aligns well with the Portland figures. Source: https://www.nzta.govt.nz/walking-cycling-and-public-transport/cycling/cycling-standards-and-guidance/cycling-network-guidance/cycle-network-and-route-planning-guide/principles/people-who-cycle/#strong

[29] Rating obtained from https://nzta.abley.com/megamaps/

[30] Austroads Guide to Road Design Part 3 (2016), pages 80-81.

[31] It is noted that the subject site is as a 50kph posted speed limit. Austroads notes that in areas that have a 70kph posted speed limit that the 80kph requirements be adopted. As such, adopting the 60kph requirements appears near to what would be required in this instance.

It should be noted, however, that Austroads allows for wide kerbside lanes to be used on 60km/h posted speed limit urban arterial roads where the road lane width of between 3.7m-4.5m[32]. The existing kerb to kerb width of the roadway on the bridge is 9.24m, with lane widths of approximately 3.5m (so the road lane width may be less than required in this type of provision; but noting the bridge is a 50km/h posted speed limit area, not 60km/h). Austroads also states that the lane sharing they describe is for experienced cyclists. The Transport Agency states that the strong and fearless cyclist 'types' should not be the design standard for cycle facilities[33]. This is particularly relevant in this instance as there are no other alternative routes for inexperienced cyclists, and that this is a major freight route.

Each bridge end has an intersection located relatively close by (Ontario Street to the east and River Street to the west). On the western side there are a number of intersections in a relatively short distance to the west of River Street (i.e. Ordsal Street, Brennan Lane, and SH94). On the eastern side Huron Street is about 140m east of Ontario Street. Two of these intersections are roundabouts, which can have a high perceived risk for cyclists. The visibility on the eastern approach is also restricted by the vertical and horizontal geometry of the road; however, this has not been subject to a site measurement. There may also be sight distance restrictions at other intersections and locations near either end of the bridge, however these would require site measurement verification.

In terms of safety for pedestrians, people walking on the southern side of the bridge must cross River Street (where heavy vehicles bypass the main commercial area). A pedestrian refuge is located here, but with no tactile warning indicators making it less usable for visually impaired pedestrians. Tactile warning indicators are also not present on the other side of the bridge. Pedestrians eastbound on the southern side of the bridge also must cross over SH1 to reach East Gore.

The lack of facilities for cyclists may also result in some choosing to use the pedestrian footpath; which is not wide enough to easily cater for both pedestrians and cyclists creating a safety conflict point.

4.1.2 Effect

4.1.2.1 Safety concerns

The effect of having a below standard cycle facility between Gore and East Gore results in safety concerns for residents choosing whether or not to cycle. The Council completed a community survey about the safety of the bridge for active modes (Appendix B). Several themes emerged, and a quote provided to illustrate each:

- Many cyclists use the footpath because it feels safer, but comment that the footpaths are very narrow which makes it difficult to pass pedestrians: 'it is too narrow and dangerous to cycle on the actual bridge with traffic'
- Concerns about provision for pedestrians and cyclists at the ends of the bridge, when crossing the highway, and at nearby intersections: 'crossing the road at either end is a dangerous option for both cyclists and pedestrians'
- Concerns that the carriageway is not suitable for cycling: 'cycles (for safety reasons) should not be permitted to use traffic section of the bridge'
- Traffic noise makes crossing the bridge uncomfortable: 'when crossing the bridge, it is very noisy with the large volume and size of vehicles travelling across'
- Issues with the footpath surface including glass: 'the surface is uneven – with a lot of trip hazards'

A small number of respondents felt that there was no issue with the existing bridge, and that the Council should focus on other matters.

Generally, given that the existing infrastructure for cyclists roughly corresponds to a facility suitable for experienced cyclists, this would indicate that around 60% of the population would be concerned with the safety of cyclists on that section of road (Gill and McNeil 2012).

NZTA Research Report 449[34] presents results from respondents to a questionnaire where about 15% of respondents said they would never use a mid-block section of road (between intersections) if there was no specific cycling infrastructure, and about 50% who would rarely. Therefore, existing mid-block provision (with no specific cycling infrastructure), is likely to be affecting in the order of 65% of the number of would be cyclists between Gore and East Gore. This validates, to an extent, the assumption that between 60-65% of the population are affected by the existing infrastructure.

[32] Austroads Guide to Road Design Part 3 (2016), page 97

[33] https://www.nzta.govt.nz/walking-cycling-and-public-transport/cycling/cycling-standards-and-guidance/cycling-network-guidance/cycle-network-and-route-planning-guide/principles/people-who-cycle/#strong

[34] https://www.nzta.govt.nz/assets/resources/research/reports/449/docs/449.pdf

The lack of a formal pedestrian crossing point on the highway and speeds, volume and composition of traffic will increase the risk related to walking also, particularly for vulnerable pedestrians such as younger and older people.

4.1.3 Consequence

4.1.3.1 Elevated Safety Risk

The following are brief examples of some of the active mode safety concerns on the bridge, and on the approaches. It is not a specific safety assessment, or exhaustive.

A search of the recorded crashes (2007-2017) showed non-injury vehicle crashes occurred in 2015 and 2017 on the bridge. A further 18 crashes occurred at the River Street/Norfolk Street/SH1 roundabout (or within 20m of the intersection) during the same time period. One was a serious injury crash at the roundabout, and another four were minor injury crashes. While the crashes have not involved pedestrians or cyclists it does indicate a busy intersection for them to negotiate. There are no records of pedestrian or cyclist crashes on the bridge during this timeframe.

Inadequate cycle facilities mean that any people who choose (perhaps out of necessity) to cycle, who do not have advanced cycle skills are exposing themselves to an elevated safety risk. The current level of service rating indicates that the river crossing has up to a medium-high safety risk for cyclists.

Some of the specific safety risks that can occur on a mid-block section of road include the potential for side-swipe crashes from vehicles on the bridge. The lanes are relatively wide (about 3.5m) however when a truck passes a cyclist in this space it leaves little margin for error (if any). Vehicles passing cyclists (trucks in particular) can buffet cyclists and pedestrians. The closer the vehicles are to the cyclists and pedestrians the more they are buffeted. With little room to manoeuvre cyclists in particular may be pushed by a gust towards the adjacent pedestrian fence.

Roundabouts are often not as safe for cyclists and pedestrians as other road users, noting that the risk to cyclists and pedestrians depends on the type of roundabout[35]. A particular concern at the River Street/SH1 roundabout is that River Street (the southern leg of the roundabout) is an arterial road which bypasses the commercial area. This means there are likely to be a relatively high number of heavy vehicles turning right out of, and left into, River Street from SH1, which may conflict with pedestrians crossing at River Street or cyclists moving straight through the roundabout Refer to Figure 4-3).

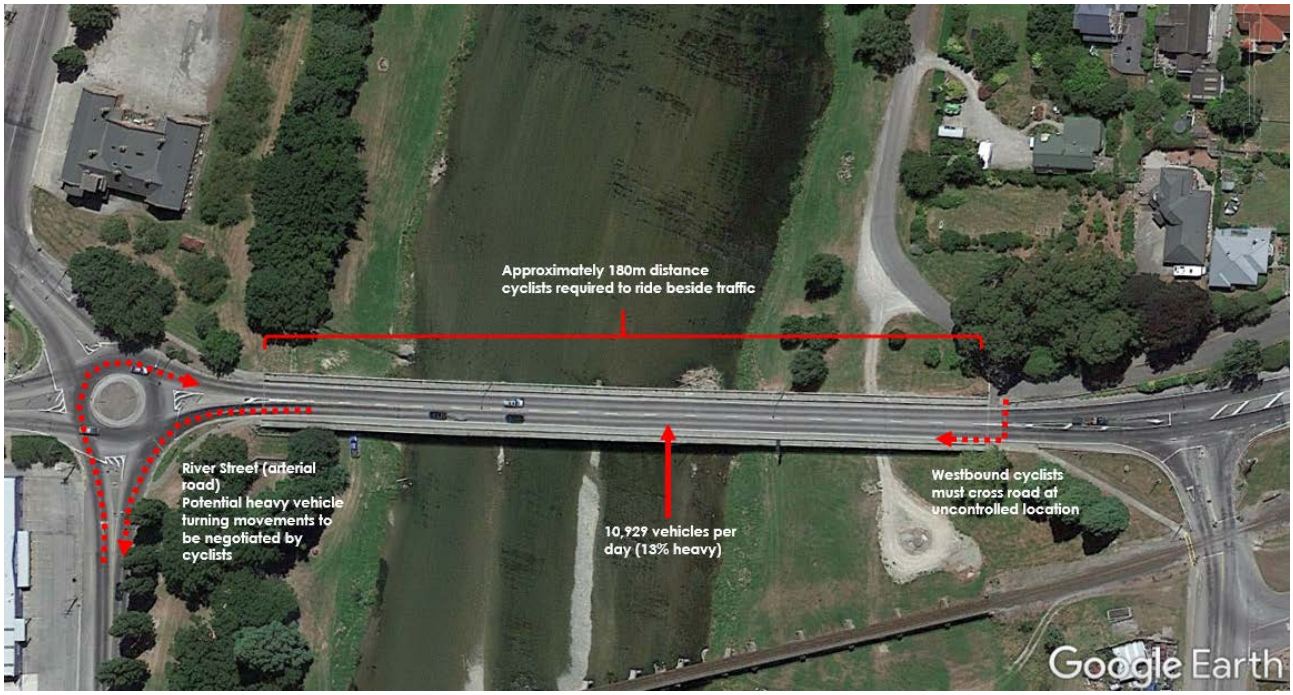


Figure 4-3: Active mode safety issues on the bridge (Base map source: Google Earth)

[35] Source: Austroads Guide to Road Design Part 4B: Roundabouts (2015), and Cycling Aspects of Austroads Guides (2017).

4.2 Problem 2: Access

STATEMENT: ACCESS BETWEEN GORE AND EAST GORE IS CONSTRAINED BY THE SH1 BRIDGE, ITS APPROACHES AND POOR LEVELS OF SERVICE FOR CYCLING AND WALKING, LEADING TO LOW RATES OF ACTIVE TRAVEL TO SCHOOL, WORK AND OTHER ACTIVITIES. AND REDUCING RECREATIONAL OPPORTUNITIES FOR TOURISTS AND LOCALS. (40%)	
Cause(s)	• Mataura River severs Gore and East Gore • Transport connection between the two side of Gore share one space; compounded by the high volume and composition of traffic. • Continued, and planned, residential and industrial growth in East Gore
Effect	• Restriction on the development of a complete, integrated, active mode transport network connecting key population bases and commercial and industrial land uses in Gore. • Existing infrastructure provisions are unsuitable for active mode choices
Consequence	• People have restricted travel choice and are unlikely to choose to use active mode transport between Gore and East Gore. • Economic opportunities are lost, or unavailable.

4.2.1 Cause

4.2.1.1 East – West Gore Severance

As outlined in the Context Section (Section 0), in 2017 Gore had an estimated population of just under 10,000 people[36]. In 2013 1,449 people lived in the East Gore area unit[37]. Analysis of the five area units (as shown in Figure 2-1) in Gore shows that in 2013 East Gore comprised about 20% of Gore's urban population but covers around just under half of Gore's urban area. Between 2008 and 2013 East Gore also grew the most out of any of the sub-regions of Gore recording 2.5% population growth[38] and more growth is occurring with residential land development and a new milk factory (refer Section 6). However, East Gore is primarily residential in land use, with only some small pockets of commercial activity (for example a petrol station, and car sales and repairs).

The SH1 Bridge is the only immediate transport connection (other than rail) over the Mataura River. This effectively splits East Gore from the rest of the urban area and contributes to a disjointed community (refer to Figure 2-1).

The Pedestrian Planning and Design Guide outlines the characteristics of a walkable community[39]. Of these being connected is an important element (where the network allows pedestrians to easily get where they want to go). The bridge is the only connection between the two sides of the town, and some pedestrian movements (such as pedestrians who find themselves on the southern footpath of the bridge walking towards East Gore) must cross the State Highway at an uncontrolled location.

4.2.2 Effect

4.2.2.1 Active Mode Network Development Restriction

One of the key effects of severance is that active mode networks are developed non-contiguously on either side of the river. Plans are currently underway to develop cycle trails in Gore and East Gore (refer to Figure 4-4).

There is limited provision for cyclists on the existing bridge; a narrow, marked shoulder, but no specific separate facility. Footpaths are provided either side of the carriageway however they are narrow and are not legally identified as shared facilities. For pedestrians, the footpath on the southern side of the bridge is not easily accessed by people living in East Gore as it links with Ontario Street south of SH1, rather than Latham Lane north of SH1. However, the southern path links much more directly with the commercial centre of Gore on the western side of the Mataura River. This means that pedestrians accessing this part of Gore from East Gore are usually required to cross SH1. There is no pedestrian refuge provided.

[36] Source: http://archive.stats.govt.nz/infoshare/ViewTable.aspx?pxID=5bb1bffe-6722-4fea-9337-db76f380a0bf
[37] Source: http://archive.stats.govt.nz/StatsMaps/Home/People%20and%20households/2013-census-population-dwelling-map.aspx
[38] Source: http://archive.stats.govt.nz/StatsMaps/Home/People%20and%20households/2013-census-population-dwelling-map.aspx
[39] https://www.nzta.govt.nz/assets/resources/pedestrian-planning-guide/docs/chapter-4.pdf

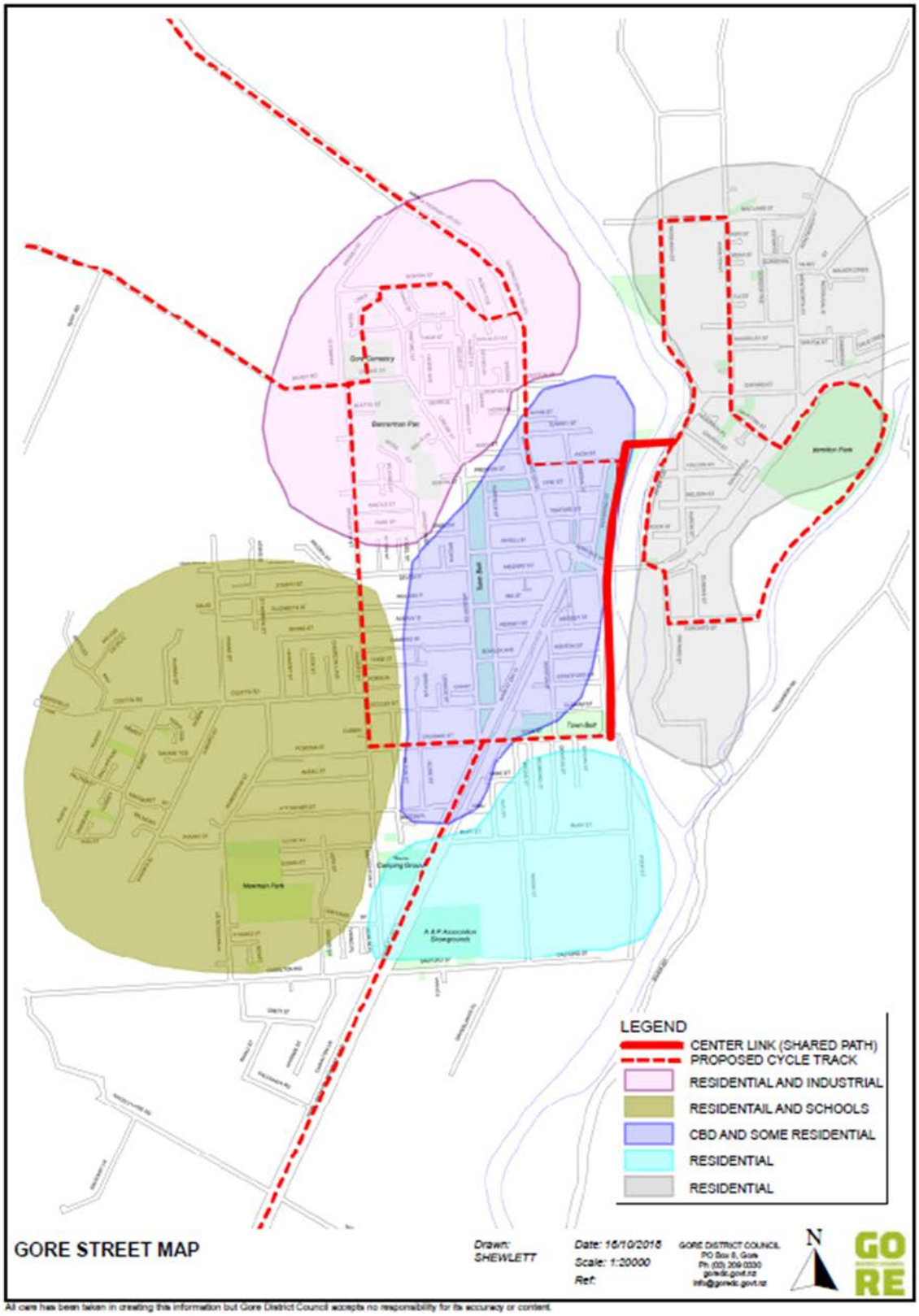


Figure 4-4: Gore Proposed Cycle Network[40]

[40] Drawing provided by GDC/Landpro showing pedestrian cycle routes under construction

Cycle trails are currently under development on either side of the river (refer to Figure 4-4) and the developers are expecting them to be popular for locals and tourists with an estimated usage of 55-100 users per day[41]).

The Gore District Trails Feasibility Study identified that an improved crossing location over the Mataura River was required to facilitate the required connection between the respective trails on either side of the river. Without the connection the proposed trails will have a lower level of service at this (only) connection point.

Gore's proposed cycle network has been developed to link key origins and destinations based on census travel demand data, as shown in Figure 4-4. However, the SH1 Bridge is currently the only viable crossing point for cyclists in the area.

4.2.3 Consequence

4.2.3.1 Lower Uptake of Active Transport Modes

The severance of the two sides of Gore, and the limited active mode infrastructure connecting them results in few people choosing to walk and cycle, with most using a private motor vehicle. This is despite Gore and East Gore only being about 1-3km travel (depending on the origin and destination).

Assessment of recent 2013 census information showed that a large proportion of commuters within Gore (East, West, Central and South) travel over the existing SH1 bridge (60% of those commuting out of East Gore and 51% of those travelling in to East Gore). 312 commuters left East Gore to travel in to West, Central and South Gore, whilst 69 commuters travelled in to East Gore from West, Central and South Gore. This equates to 381 commuters using the bridge daily. The census indicated the percentage of cyclists within these five census areas at 1.8%. This equates to 6-7 commuters cycling over the existing bridge each day.[42].

Given the relatively short distance between these two areas this a low update of cycle journeys between the two locations.

No specific data is held on how school children travel to and from school, however, based on the 2013 census data 1008 10-19 year olds lived in East Gore. Many of these will attend Gore High School, Longford Intermediate or St Peters College (which are located on the western side of the Mataura River). All of these students that live in East Gore must cross the existing bridge to get to and from school. It is noted that the proposed pedestrian/cyclist network (refer Figure 4-4) passes close to all these schools, and that this would help to link students cycle to school, in line with the aspirations in the GPS.

In terms of pedestrians the 2015-2017 Ministry of Transport Household Travel Survey[43] indicates that pedestrians comprise about 11% of the mode share of trip legs (for main and secondary urban areas). Data from the 2013 Census indicates that pedestrian commuter movements from East Gore to Central Gore comprised around 7% of the commuter share. Commuter share, and say general pedestrian movements, do not necessarily occupy the same percentage of total trip movements, however, as a rough indicator it appears as though pedestrian demand in East Gore is not far from the average.

The above figures suggest that there is a currently a suppressed demand from active mode users crossing the existing state highway bridge.

[41] http://www.goredc.govt.nz/our-facilities/parks-and-recreation/walkwayscycleways/
[42] Calculation made by applying the cyclist types on the population living in area units East Gore, West Gore, North Gore, Central Gore, and West Gore as listed on the Statistics New Zealand website.
[43] https://www.transport.govt.nz/resources/household-travel-survey/new-results/

5. Benefits

The benefit statements for the project are presented below. These were drafted at the facilitated workshop and further developed by the project team after consideration of the problem statements and benefits.

- Minimise risk to public safety – improve safety for active modes 40%
- Increased numbers of people who cycle and walk for travel in Gore 40%
- Improved access between Gore and East Gore 20%

Benefit 1 reflects the fact that improving active mode facilities will contribute to achieving a key GPS objective to reduce the risk of deaths and serious injuries.

Benefit 2 recognises that addressing the problems will encourage more people to walk and cycle. This will have wider community benefits for people's health and the environment. It can also lead to more activity and interaction between people, contributing to quality of life outcomes and enhancing community cohesion. This is also in line with the GPS, particularly as an improved connection will enable students living in East Gore to walk/cycle to high school.

Benefit 3 reflects the desire to provide mode choice in New Zealand. This can reduce transport costs, improve health and create a more desirable place to live. This is also in line with go the GPS.

6. Opportunities

As well as the benefit of addressing the identified issues, there are also some wider associated opportunities. These are explained below. Another possible opportunity, using a new crossing to provide for a future water pipeline, was explored during the option analysis phase, refer to Section 13.1.11.

6.1 Resilience

The bridge is not highlighted in the Transport Agency's resilience prioritisation tool however, it is the only immediate connection between East Gore and the rest of Gore. In the event of a closure on the bridge (for example a vehicle crash) then accessing either side of the river, depending on the origin and destination, may require in the range of 25km-35km additional travel[44]. The proposed pedestrian/cycle bridge will add resilience for local trips between East Gore and the main urban area. An additional crossing point over the Mataura River is also in line with the GPS as it increases the resilience of the transport system.

6.2 Improving the liveability of Gore

More people walking and cycling will lead to an increase in activity and vibrancy for the town. A track can also provide for children learning to cycle and reconnect the town to the river environment, making a more attractive and liveable town.

The recent land use changes proposed/underway in Gore, such as the milk processing facility at McNab, near East Gore[45] (80 jobs) and Matai Ridge residential development[46] in East Gore (40 dwellings) (now on hold) are likely to exacerbate the identified issues. They also present opportunities to encourage the use of active modes and encourages a wider range of transport choice, in line with the GPS. Improved access by walking and cycling to East Gore is expected to support the direction of the Council's developing Spatial Plan. Early work on the Spatial Plan has identified a further area suitable for residential zoning in East Gore.

6.3 Economic Growth

There is an opportunity to support the recent growth of East Gore and stimulate further growth, by improving connectivity with the rest of Gore. There is also an opportunity to increase the number of visitors to the town and the length of time they stay in the town by providing a walk/cycle track. Both of these opportunities have the potential to bring economic benefits. They align with and enable the Council's Ready for Growth strategy, as well as helping to unlock productivity and business growth, a focus of the GPS.

Trails locations have been identified in the Gore District Trails Feasibility Study. These include West Gore and East Gore tracks. The proposed track with its new connection over the Mataura River is an opportunity to link these proposed trails creating a greater degree of network connectivity[47], which will be attractive.

6.4 Strengthen Social and Cultural Connections

There is an existing disconnect between East Gore and the rest of Gore due to there being only one transport connection between the two areas. The current connection also focuses on connecting vehicles movements, not pedestrians or cyclists. An additional connection across the Mataura River will strengthen the social and cultural connections of Gore. It will do this by improving East Gore's access to jobs, education, goods, services, cultural facilities and public amenities which are located in West Gore.

[44] Measurements approximated from Google Maps. Note some detours may result in re-routing of traffic on roads not appropriate for higher traffic volumes, or heavy vehicle movements.
[45] Source: https://www.stuff.co.nz/business/farming/dairy/101046088/mataura-valley-milk-shakes-up-the-southland-dairy-industry
[46] Source: http://www.matairidge.nz/
[47] Source: http://www.goredc.govt.nz/assets/documents/plans-reports/Gore-District-Trails-Feasibility-Study-2017.pdf

7. Investment Logic and Benefit Maps

An Investment Logic Map was developed to identify and clarify the links between problems and benefits. This is shown in Figure 7-1.

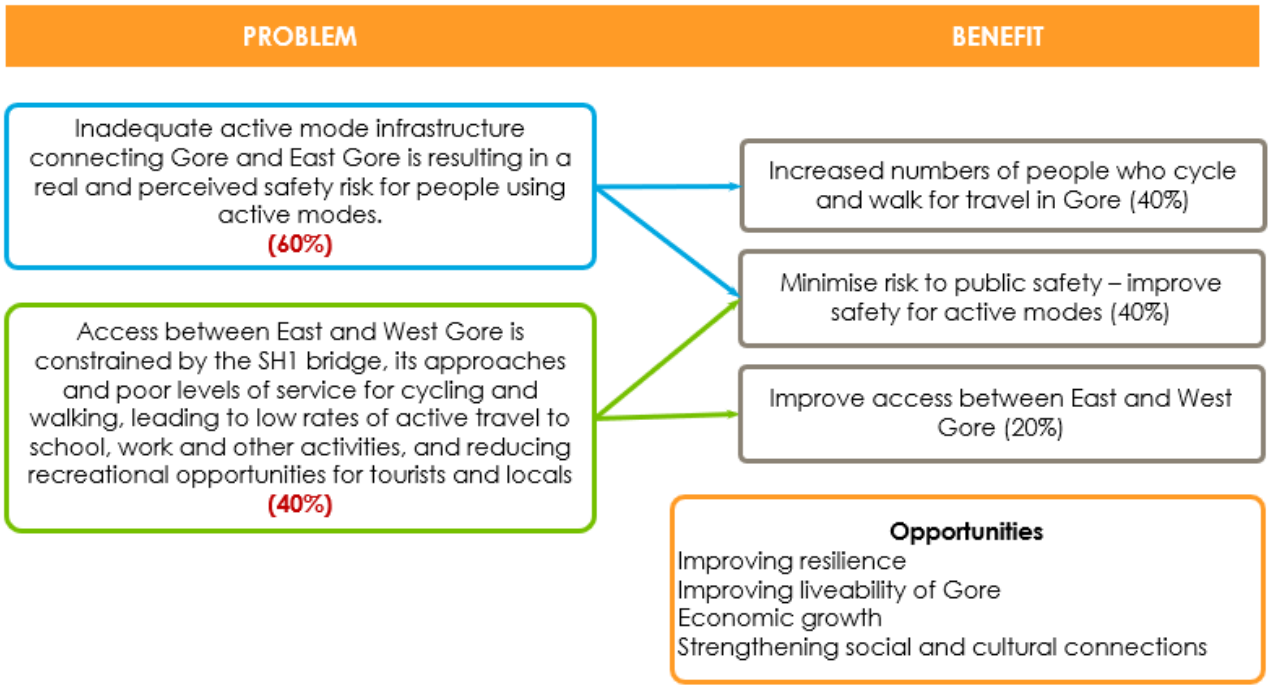


Figure 7-1: Investment Logic Map

A Benefit Map was developed to demonstrate the links between the benefits and key performance measures that can be used to measure success. This is shown in Figure 7-2.

The problems, investment benefits, and opportunities will be used to develop an assessment framework to evaluate options in the next stage of the process.

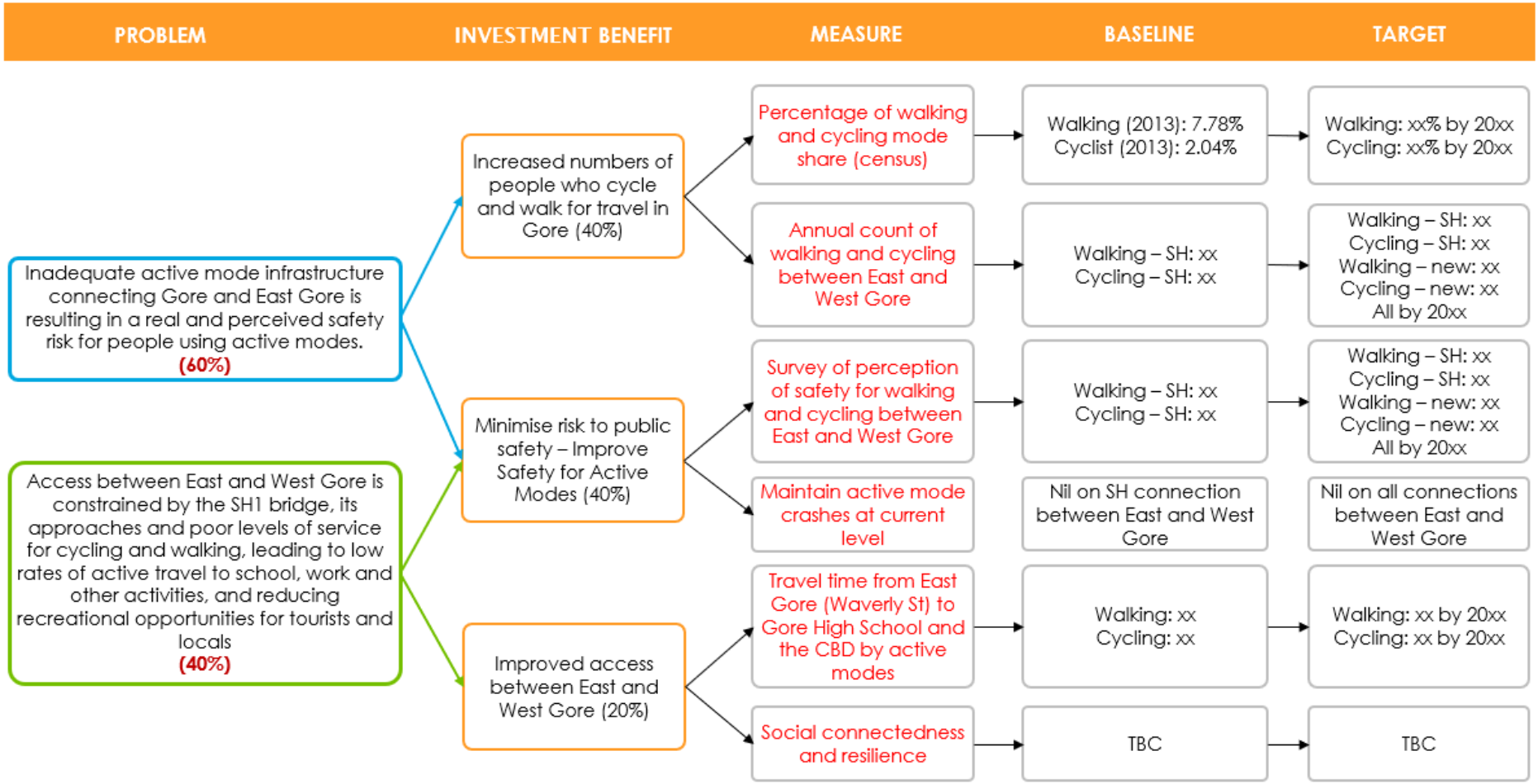


Figure 7-2: Benefit map

8. Constraints

The following section sets out the various constraints identified in the vicinity of the SH1 bridge over the Mataura River in Gore. This area is contained within the boundaries of the Gore District, in the Southland Region. This information will be used to inform option development in the next stage.

8.1 Existing SH1 Bridge

Constraint Category	Constraint identification
Land Use	• The primary road crossing over the Mataura River is provided by the SH1 bridge. The bridge is designated for 'State Highway purposes' (D20 - NZTA). There are no conditions associated with the designation. The state highway designation appears to be broad to the east, extending substantially wider than the current formed carriageway. The state highway designation narrows substantially on the western bank as it passes through Gore's commercial centre. • Landward of the western riverbank in the vicinity of the bridge is identified as 'arterial road' (River Street) to the south of the bridge, and 'unformed road' to the north of the bridge. Immediately landwards of the unformed road is the Richmond Street Reserve. • Land to the west of the bridge approach is zoned 'Central Townscape Area' and is the high density commercial and business area for Gore. Land ownership appears dominated by small properties in the commercial core, other than for the reserve areas noted. • D18 (NZ Police) and D32 (District Court) lie to the west of the bridge, and the 'Triangle' reserve. • To the immediate south of the state highway designation on the eastern bank is the Main South Railway Line, located within Designation D1, for 'Railway purposes' (KiwiRail). There are no conditions associated with the designation. • The railway and state highway designations abut from the eastern riverbank onwards. • No information on contaminated land was available – further information should be sought from Environment Southland once site-specific information is required. • Landward of the eastern riverbank in the vicinity of the bridge and to the immediate north of the state highway designation is identified as 'formed road' (River Terrace). A small undefined reserve area lies to the immediate north of the state highway designation. • Land to the north of the state highway on the east bank is zoned 'Residential A', consisting of medium density residential development in primarily fee simple titles. • Being located within the Gore urban area, and being in the vicinity of the SH1 bridge, most if not all of the land will have been previously disturbed by post-1900 human activity.
Cultural and Historic Heritage	• A cluster of 'Significant Trees' (T22 – a row of English Oak trees) are identified on Planning Map GOR 07A to the immediate north of the bridge on the western riverbank. • A cluster of 'Significant Trees' (T15 – various species located in 'the triangle') is noted on Planning Map GOR 07A to the immediate west of the bridge on the western riverbank • A cluster of 'Significant Trees' are located in Victoria Park (T33 – various species) in the vicinity of the eastern bridge approach, between SH1 and the railway to the immediate south (Planning Map GOR 07). • A 'Significant Tree' (T79 – Copper Beach; 3 Latham Lane) lies to the immediate north of the state highway in the vicinity of the eastern bridge approach (Planning Map GOR 07). • Heritage item H20 (Old Gore High School, 1 Richmond Street) is identified within the southern end of the Richmond Street Reserve. • The Mataura River is a statutory acknowledgement area of Te Rūnanga o Ngai Tahu.

	• There are no archaeological sites or other heritage items identified on the planning maps in the immediate vicinity. Three sites are identified on the NZAA's Archsite map well to the southwest of the SH1/River Street intersection. Further investigation via Heritage New Zealand *Pouhere Taonga* is recommended.
Natural Hazards	• The whole of the riverbed (bank to bank) is defined as the 'Mataura River Floodway', and also extends to land east of the eastern riverbank, including the eastern bridge abutment and approach. Within this area, the erection of any structure and earthworks require resource consent (in areas that are not classed as riverbed, which is Environment Southland's jurisdiction). • Any new bridge, approaches and abutments are likely to lie within the 'Mataura River 20m Buffer Zone' – activities including earthworks and the placement of structures within this buffer will require resource consent. • Flood protection works are present immediately north and south of the existing bridge. • Land adjacent to the river is identified as *'Mataura River floodplain: prone to flooding subsequent to a stopbank breach or stopbank overtopping"*.
Natural Environment	• The Mataura River is subject to the *Water Conservation (Mataura River) Order 1997*. The WCO protects the values of the river in respect of water quality and quantity, in respect of protecting outstanding *'fisheries and angling amenity features'*. • The Mataura River holds high recreational fishery values, including Brown Trout and inanga habitat. The Brown Trout fishery is recognised by the WCO, whereas the inanga habitat is not otherwise identified in the relevant plans in the vicinity of the area of interest as the river is not tidal. • Aside from the Mataura River which is identified as a significant natural feature, no other outstanding or significant natural features or landscapes are identified in the vicinity of the area defined in the relevant District Plan maps. • A number of rules control activities and structures in proximity to the riparian margins and bed of rivers.
Infrastructure	• No infrastructure information beyond legal road boundaries and flood protection works is indicated on the District Plan planning maps. Further investigation is required.
Social / recreational	• Several reserve and open space areas exist in the vicinity (previously identified in this table under 'land use'. These provide recreational opportunities, and access to the river. • There are no public conservation areas in the area defined in the relevant District Plan maps. • The existing bridge is an essential link between Gore and East Gore and is also a potential barrier. The areas landward of both bridge approaches hold moderate urban amenity values which are highly valued by the community.

8.2 Area north of the State Highway Bridge

Gore District Plan planning maps have been reviewed. These are available on the Gore District Council website (District Plan Hazard and Utility and Planning Maps 04 and 07).

Constraint Category	Constraint identification
Land Use	• Land use in the area to the north of the bridge is dominated by a mix of Industrial and Residential A-zoned land on the west bank, and Residential A and Rural-zoned land on the east. • Upstream of Denton Street (west) and Oxford Street (east), land parcels become larger, and development density reduces. • Land use in the vicinity of the river is dominated by open space (flood plain). • High voltage transmission lines lie to the north of Gore, at the northern extent of the defined area. • Hokonui Drive (SH94 – Designation D22 – no conditions) lies landward (west) of the flood protection works, running approximately north-south then turning northwest at the urban edge.

Constraint Category	Constraint identification
Cultural and Historic Heritage	• (See above) • There are a number of 'Significant Trees' groups west of the river, as shown on Planning Map GOR 04, identified as T16 (various species – lining SH94 to Waimea Street). Several groups of 'Significant Trees' are identified on the east bank, but well landward of the riverbank, and near Hamilton Street within the Residential A zone (T81 – 83).
Natural Hazards	• Upstream of Denton Street (west) and Oxford Street (east) the land either side of the river is identified as 'Mataura River Floodway'. • Both sides of the river are flanked by Flood Protection Works in this location. • Large areas landward of the flood protection works are identified as *'Mataura River floodplain: prone to flooding subsequent to a stopbank breach or stopbank overtopping"*.
Natural Environment	• (See above)
Infrastructure	• No infrastructure information beyond legal road boundaries and flood protection works is indicated on the District Plan planning maps. Further investigation is required.

8.3 Regional Water Plan (operative)

The Southland Regional Water Plan is operative but is due to be replaced by the proposed Southland Water and Land Plan (pSWLP). The pSWLP is currently under substantial appeal and will move through the Environment Court late 2018/ early 2019. As the pSWLP cannot currently be relied upon, and as the relevant provisions are very similar to the operative provisions of the RWP, the pSWLP have not been considered in this memo. Note that they will need to be taken into account in the event that resource consents are required.

Constraint Category	Constraint identification
Structures over rivers	• The placement, erection or reconstruction of a bridge, and associated bed disturbance is permitted (no consent needed) if it complies with the conditions of Rule 26. The rule requires *inter alia* that there are no support structures in the bed. This is unlikely for the construction of a new bridge – consent may be needed under Rule 26(b). • The alteration of the existing SH1 bridge is a permitted activity subject to compliance with the conditions of Rule 36 – most of which would (typically) be complied with when building onto / widening a bridge (e.g. no additional support structures, no reduction of hydraulic capacity, no navigational hazards result, etc.). • Bed disturbance not associated with a permitted activity requires resource consent.
Diversion of water	• Any in-stream construction activities that need to be preceded by diversion of water will need resource consent if the conditions of Rule 20 cannot be met (to be determined), and subject to consistency with the WCO.
Discharges to water	• Any discharges to the Mataura River resulting from any activity (whether construction or operational phases) must be consistent with the Water Conservation Order and / or the RWP rules, whichever is the more stringent. • The Mataura River at Gore Bridge (100 m either side of the bridge) is identified in Appendix K of the RWP as a 'Popular Bathing Site'.
Contaminated Land	• Contaminated land information is held by Environment Southland and is available on request. Further investigation will be required to identify whether any contaminated land sites may affect any given proposal. Discharges from contaminated sites resulting from their disturbance will require resource consent.

9. Strategic Alignment

This part of the Strategic Case sets out how the investment aligns with strategic direction. The assessment is presented in local, regional, and national categories.

9.1.1 Local

Strategy/Policy Document	Alignment with identified problems
The Gore District Plan[48] outlines the issue of keeping the existing transport network sustainable, stating an objective of sustaining the potential for transportation routes to meet the reasonably foreseeable needs of future generations.	VERY STRONG
'Ready for Growth' is a development project for the Gore District[49]. The aim of the project is to grow Gore's District population by 1500 people by 2030.	STRONG
This project also aligns with other previous work such as the Gore District Trails Feasibility Study which is outlined in the summary of previous work and identifies need for a better crossing of the Mataura River.	VERY STRONG
The Council have adopted a Tourism Impact Statement[50] which aims to grow visitor spend in the District through implementing four key projects. The Bridge Project and the Riverside Project are key components of the Longford Shared Path.	VERY STRONG
The Gore District Long Term Plan 2018-28 includes $1.2m towards the cost of the project. The Transport Activity Management Plan includes a focus on making Gore more cycle friendly and creating a network of tracks, particularly for children travelling to school and to support children learning to ride.	VERY STRONG
With the introduction of financial assistance for footpath maintenance, the Council's budget for footpaths has effectively doubled. As a result, the Council will be focusing on improving footpaths and shared paths across Gore, which will support the proposed walking/cycling track.	STRONG
Council approved a bridge crossing at the Council meeting mid-2018.	VERY STRONG
Gore District Council adopted the Southland Cycling Strategy (2016-26) in 2018 (refer below).	VERY STRONG

9.1.2 Regional

Strategy/Policy Document	Alignment with identified problems
The Regional Land Transport Plan 2018-2021 (RLTP) has a policy of providing mode choice including walking, cycling and public transport[51].	VERY STRONG
Table U (page 128) of the RLTP includes provision for a Flood bank cycle/walkway project. The project description is: To create a safe off the carriageway pathway between East Gore and South Gore via the flood banks for both cycle and pedestrian use.	VERY STRONG
The Southland Cycling Strategy "…aligns with the New Zealand Government's direction to provide for safe, accessible cycling as a transport mode and recreational and tourism activity providing health, lifestyle and local economic benefits. The Strategy establishes a process for local government, agencies, the community, cycling organisations, the tourism industry and business to develop and invest	VERY STRONG

[48] Source: http://www.goredc.govt.nz/assets/documents/plans-reports/district-plan/201406/05-Transportation.pdf
[49] Information sourced from: https://www.goredc.govt.nz/our-district/economic-development/ready-for-growth-a-development-project-for-the-gore-district/
[50] Tourism Impact Statement provided by Gore District Council staff by email on 28/1/2019
[51] Source: https://www.es.govt.nz/Document%20Library/Plans,%20policies%20and%20strategies/Regional%20plans/Otago%20Southland%20Regional%20Land%20Transport%20Plans/Otago%20Southland%20Regional%20Land%20Transport%20Plans%202018-2021.pdf (page 62)

Strategy/Policy Document	Alignment with identified problems
in cycling opportunities in a consistent, collaborative and sustainable way."[52]	

9.1.3 National

Strategy/Policy Document	Alignment with identified problems
The GPS states the access objective of a land transport system is to enables transport choice and access. It is stated that the GPS 2018 supports investment in the provision of good quality, safe, fit-for-purpose walking and cycling infrastructure. It also states that mobility is the key to unlocking productivity and business growth and strengthening social and cultural connections. This mobility will be achieved through creating an efficient, modern and resilient transport system.	VERY STRONG
The Long Term Strategic View is currently being reviewed, however the strategic context of Version 1.0 remains valid. Five focus areas for investment in cycling are identified for the shorter term; of which the most relevant are: 'continue to grow and connect safe urban cycling networks in regional centres', promote economic development through the provision of safe on-road links between the New Zealand Cycle Trail Great Rides and other cycle trails', and 'lift the confidence and capability of cyclists, especially young cyclists entering the transport system for the first time'[53].	VERY STRONG
Safer Journeys Action Plan 2016-2020[54] has a vision of making the road system increasingly free of death and serious injury. The Plan outlines that the Transport Agency will continue to deliver the Cycle Safety Action Plan through the National Cycling Programme – Making Cycling Safer and More Attractive (refer page 12 of the Plan).	VERY STRONG
The Planning and Policy Manual (2007) sets out a walking and cycling policy matrix. For urban state highways that connect cities over 30,000 people and carry 10,000vpd it states the following: "Recognise the importance of cycling and walking in urban areas and provide appropriate infrastructure based on funding priorities in new capital projects and through maintenance activities, especially where the state highway is part of the most appropriate route or safety or 'pinch point' concerns exist."	VERY STRONG

[52] Source: https://icc.govt.nz/wp-content/uploads/2018/03/Southland-Cycling-Strategy-2018-04-16-Infrastructure-and-Services-Southland-Cycling-Strategy-Appendix-1.pdf (page 4)
[53] Source: https://nzta.govt.nz/assets/planning-and-investment/docs/ltsv-1.0-components-of-the-transport-system.pdf
[54] Source: http://www.saferjourneys.govt.nz/assets/Safer-journeys-files/Safer-Journey-Action-Plan-2016-2020.pdf

10. Summary and Next Steps

As demonstrated in Table 10-1, the available evidence base supports the problem statements. The evidence strongly supports progressing a project to address the identified safety and access problems for active modes, given alignment with the GPS as well as local strategies such as Ready for Growth, Tourism Impact Statement and the Long Term Plan.

There is a clear gap in the active mode network which is caused by lack of infrastructure, overreliance on the state highway bridge which has poor active mode provision, and severance caused by the river. There is currently limited network resilience as there is only one crossing of the Mataura River.

These issues are leading to low uptake of active modes and higher risk for those choosing to walk and cycle. There would be benefits to addressing these problems. One way to do this might be to improve the existing SH1 crossing or supplement this with a new independent structure connecting to the planned network of pedestrian and cycling tracks along the river and beyond. These would bring wider community benefits, as well as providing a safer option for active modes, and enhanced mode choice. Other options will be explored in the next phase.

It would be useful to collect further information regarding user perception, more up-to-date cyclist and pedestrian counts on the state highway bridge, and travel mode surveys of high school students.

Table 10-1: Summary table

Problem/ Opportunity	Key Findings
Inadequate active mode infrastructure connecting Gore and East Gore is resulting in a real and perceived safety risk for people using active modes.	• There are no existing cycle facilities and people choosing to cycle are therefore likely to be limited to experienced cyclists and are therefore risky for people who do not have the required cycle skillset. • The volume and mix of traffic, with 13% heavy vehicles in the traffic stream, combined with the narrow carriageway width on the bridge presents a real and perceived safety risk for active modes. • Each end of the bridge has an intersection in close proximity, and more intersections are nearby too. The available sight distance on the east of the bridge is restricted by the existing road geometry. • Pedestrian facilities are more complete; yet could be improved, for example to provide treatments for visually impaired people. • The existing facilities are located immediately adjacent to an important, busy, freight route, increasing the potential severity if a crash occurred. • There have been no reported cyclist or pedestrian injury crashes in the last five years on, or in the vicinity of, the SH1 bridge. This is likely to be due to inadequate active mode infrastructure suppressing the number of users. • A community survey provided evidence that people perceive the bridge to be dangerous, and many cyclists use the narrow footpaths instead.
Access between Gore and East Gore is constrained by the SH1 bridge, its approaches and poor levels of service for cycling and walking, leading to low rates of active travel to school, work and other activities, and reducing recreational opportunities for tourists and locals	• Initial estimates indicate potential demand in the order of 130-170 cyclists per day from East Gore to the rest of the town. • The current facilities are not catering for a large proportion of the community who may wish to use active modes. • Both high schools are located to the west of the river, and all East Gore students must travel across the SH1 bridge to get to school. Providing for young people to get to school by active modes is a focus of the GPS. • East Gore is growing, with new houses, and a new employer, and has experienced growth between the last two available census data series.
Opportunities; resilience, liveability of Gore, economic growth, and social and cultural connectivity.	• There is a significant detour if the bridge is not available for users. • Trails are currently under development in the Gore District, and some investment into trails nearer the township has already been undertaken. • There is a desire to better connect the community and improve the connection with the surrounding natural environment; especially the river area.

Problem/ Opportunity	Key Findings
	• There is an opportunity to benefit from the influx of international visitors to NZ by increasing the tourism offering. • Refer to Section 13.1.11 for opportunity explored during option analysis.

Part B(i): Identifying the Recommended Option

This section describes how the long-list of options for the Longford Shared Path was developed, and the process leading to the formulation of the shortlist of options for analysis. The options analysis was primarily focused on determining the best location and type of crossing that addressed the identified problems.

In line with business case best practice the following methodology was adopted:

1. Develop a long list of options.
2. Identify relevant assessment criteria.
3. Score the long list against the weighted Investment Objectives.
4. Exclude options that do not contribute to the Investment Objectives and document reasons.
5. Complete initial technical assessment of remaining long list options.
6. Score remaining options against the assessment criteria using initial technical assessment.
7. Use criteria scores to discard options and identify a short list, including a Do Minimum option.
8. Present the short list to the stakeholders at a workshop.
9. Update and reduce the short list to reflect stakeholder feedback.
10. Further technical assessment of short list – cost, connection to existing network, constructability.
11. Value for money assessment of short list.
12. Discuss outcomes and agree recommended option.

A multi-criteria analysis was used to assess the long listed options. The assessment was undertaken in line with NZ Transport Agency's 'Business Case – MCA Guidance' (November 2018).

11. Long List Option Development

A long list option workshop was held in October 2018. Staff from the Council, the Transport Agency, and Stantec attended. During the workshop the findings of Part A were revisited. Following this the participants were encouraged to put forward a wide range of options that could address the identified issues.

Aside from the do minimum options the options fell into two broad categories; 'online', and 'offline' options. Online options are those that would make use of existing infrastructure; primarily the existing State Highway 1 bridge, however another option raised was to use the railway bridge. Offline options involved creating a new independent crossing; either by way of constructing a new bridge, or by a ferry service.

During the long list workshop, it was identified that consideration should be given to how a new crossing would link to the proposed pedestrian and cyclist network that the Council are currently constructing (refer Figure 4-4). This network links key population centres to destinations such as public spaces, open spaces, and public facilities including the library, museum and schools. Consideration of the connectivity to this wider network has been included in the development and assessment of the options.

Twenty options were identified. These are presented below.

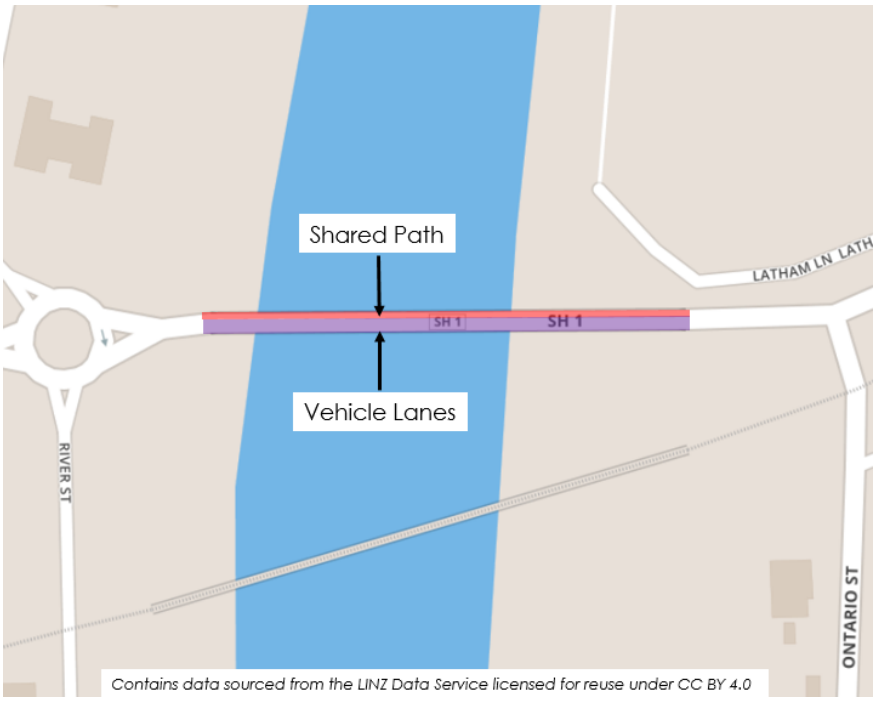
11.1 Do Nothing (Base Case) (Option 1)

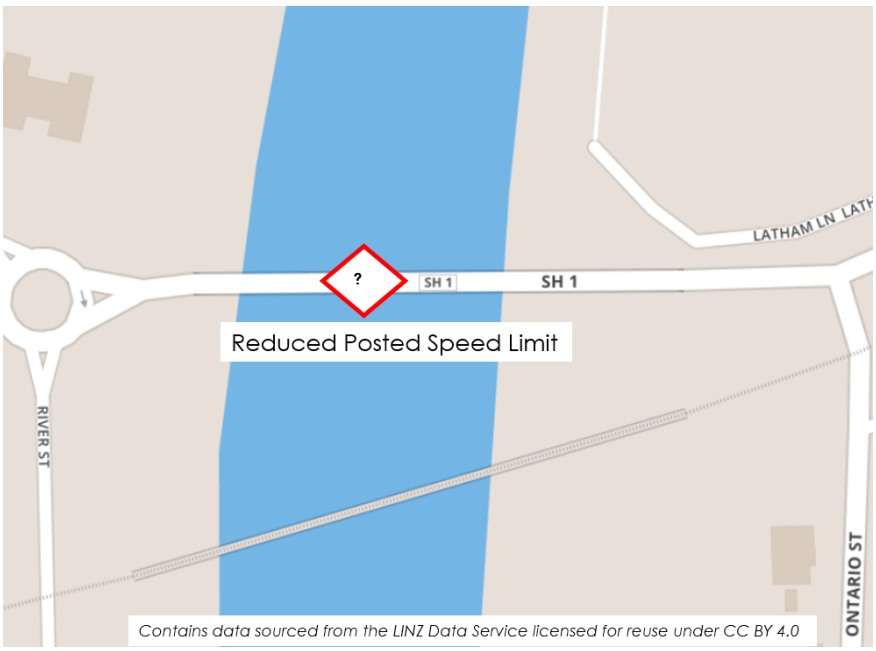
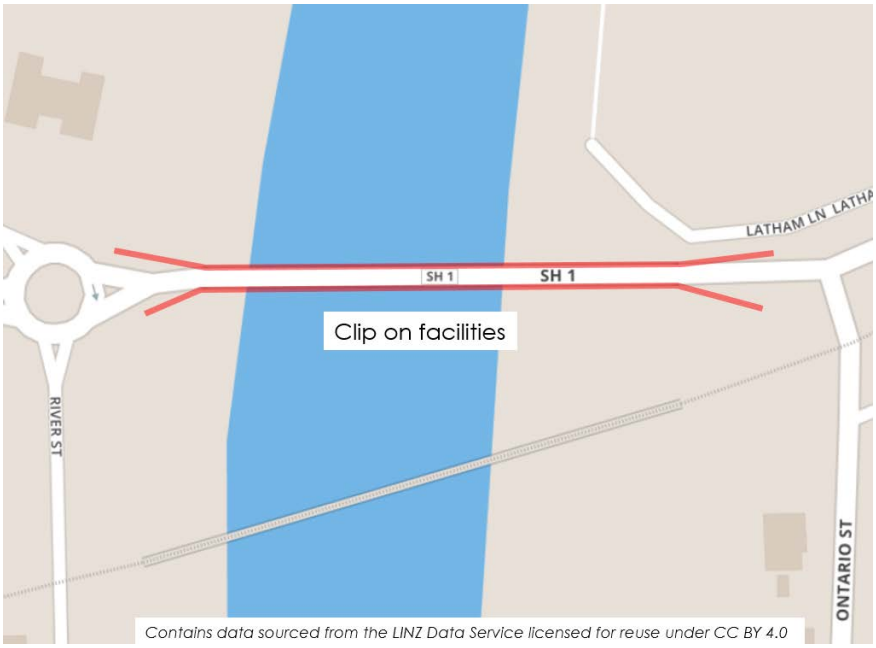
The base case constitutes doing nothing to the existing transport provisions. The results of the base case were outlined in Part A of this document.

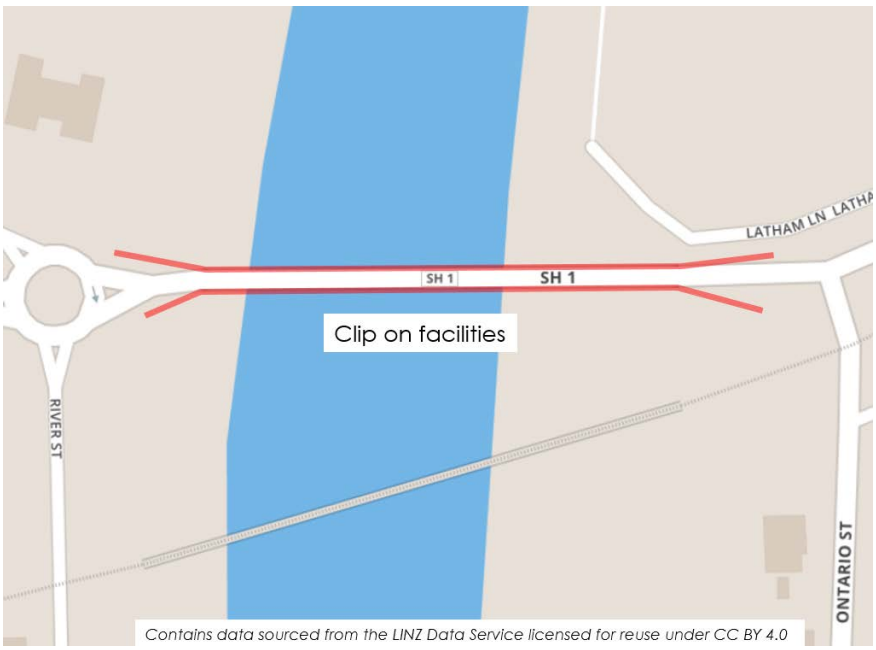
11.2 Do Minimum (Option 2)

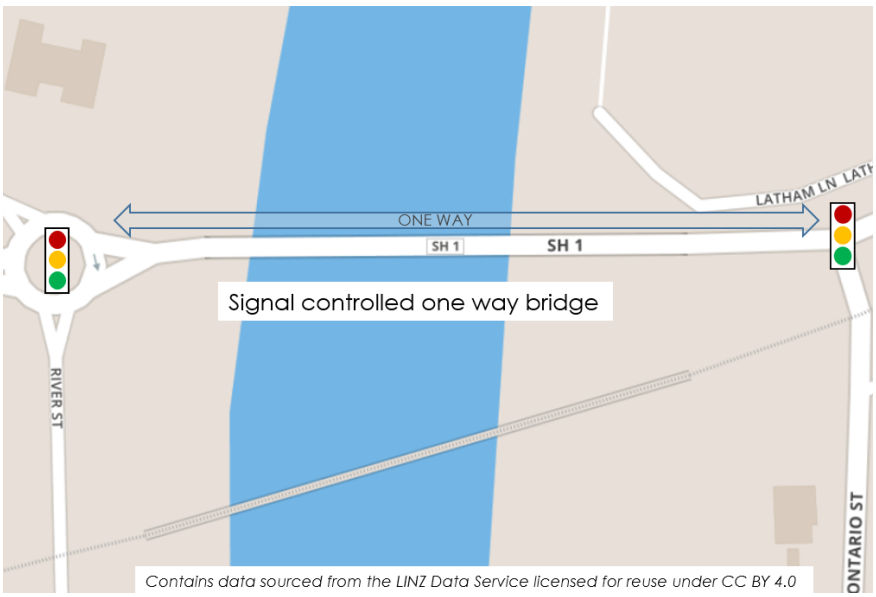
The Council have allocated some funding for minor improvement works that includes provision for improving facilities for pedestrians such as installing mobility crossings, and footpath widening to provide shared paths. The specific locations of these works have not been confirmed at this stage, however it is anticipated that in the short-medium term, some of the works will occur at, or in the vicinity of the existing SH1 bridge. For the purposes of the assessment we have assumed that drop kerbs will be provided at the eastern end of the bridge and a crossing provided for pedestrians underneath the existing bridge. We have assumed footpath widening will not be undertaken due to the width constraint on the bridge.

11.3 Online Longlisted Options

ID	Description	Graphic (Indicative)
1	Do nothing – No change to existing road layout or facilities. Ongoing maintenance and other works already scheduled	None
2	Do minimum – Widening of footpaths on approaches to existing bridge and improving crossing points. Low cost, low risk solutions	None
3	Reallocate existing bridge width, and approaches - Assuming bidirectional path on one side only. Rationale: Uses existing bridge width to create a path where cyclists do not have to cycle in the live lane.	

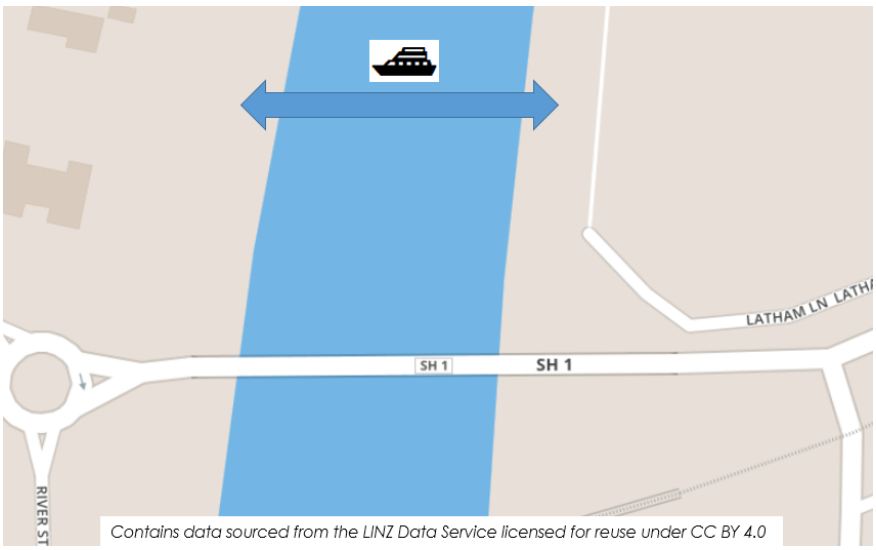
ID	Description	Graphic (Indicative)
4	Reduce speed limit on existing bridge Rationale: Reduces the potential severity of the crashes on the bridge	
5	Clip on facilities to provide additional shared space (one or both sides), without any other work Rationale: Provides additional space for cyclists crossing on shared path.	

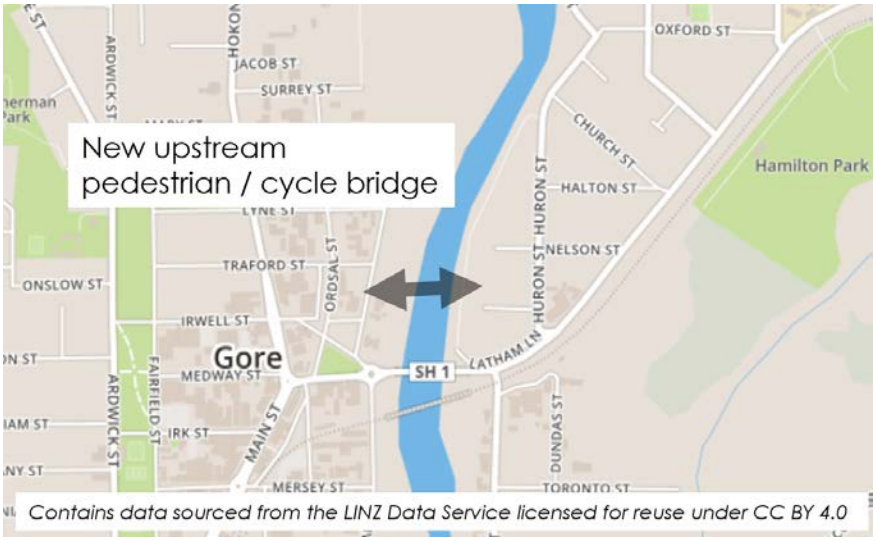
ID	Description	Graphic (Indicative)
6	Clip on facilities (one or both sides), and improvements to approaches Rationale: Provides additional separate space for cyclists crossing on shared path	
7	Widen the existing SH bridge to better accommodate active modes Rationale: Provides additional space on the bridge so that all modes can be accommodated with separation.	

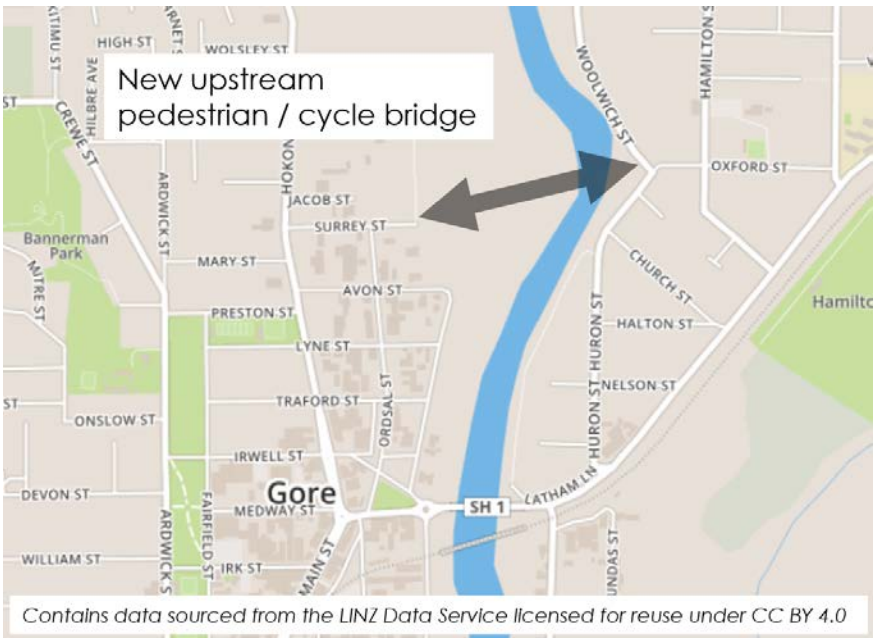
ID	Description	Graphic (Indicative)
8	Install traffic signals at either end of the bridge and turn the bridge into a one-way arrangement Rationale: The signals at either end of the bridge would mean the bridge would be one-lane bridge. This would result in more space available on the bridge to provide separate facilities for active modes.	

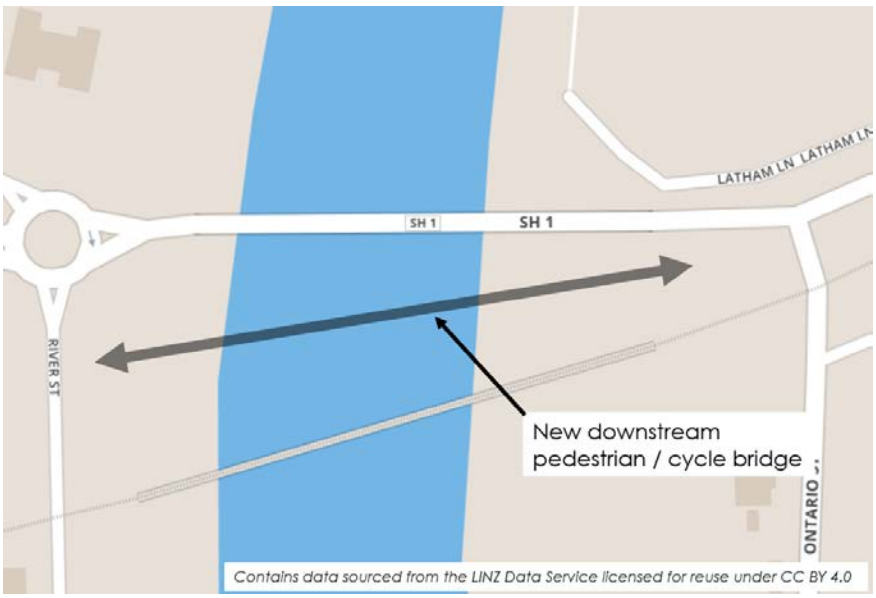
11.4 Offline Longlisted Options

ID	Description	Graphic (Indicative)
9	Use existing rail bridge (clip on facilities) Rationale: Uses another existing bridge structure to provide facility for active modes.	

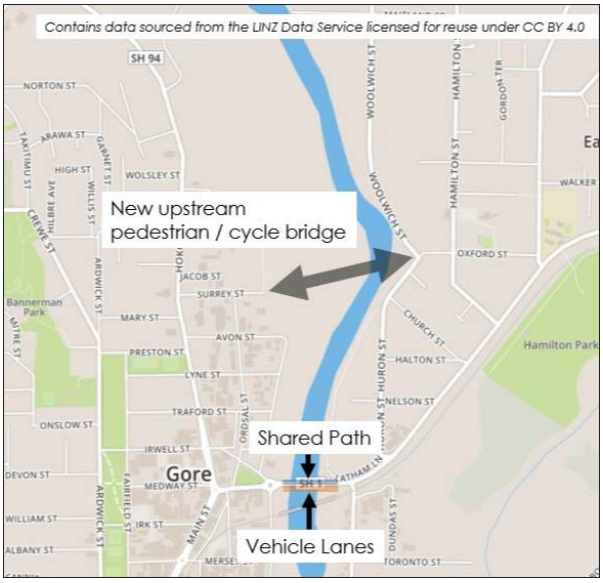
ID	Description	Graphic (Indicative)
10	Ferry service Rationale: Provides a separate means of crossing the river than a bridge	
11	New State Highway Bridge - multi-purpose bridge (all modes) Rationale: Removes some of the traffic from the existing bridge by providing an alternative crossing. May mean that the old bridge can be re-configured to provide more space for active modes.	
12	New local road bridge (now) Rationale: Provides a new crossing place for all modes to connect East and West Gore.	

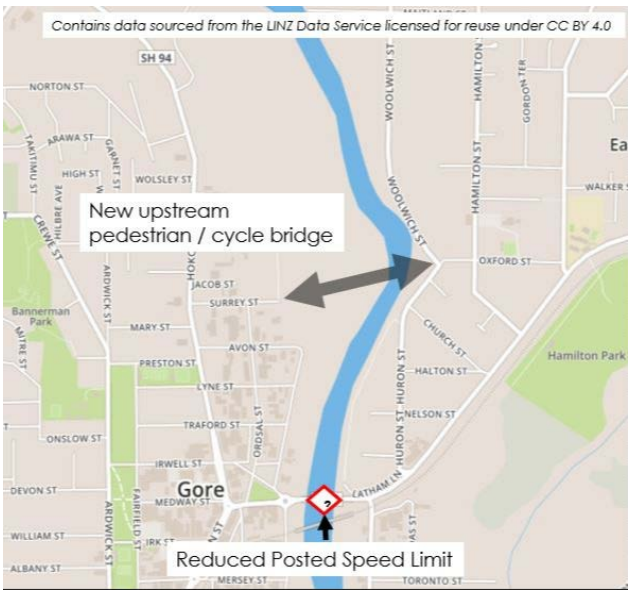
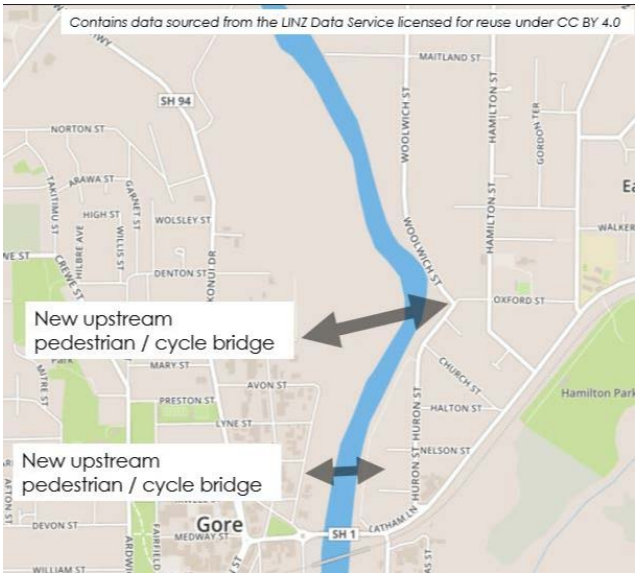
ID	Description	Graphic (Indicative)
13	New local road bridge (future) - designating new local road and in interim constructing new active mode bridge. Rationale: Provides a new crossing place for all modes to connect East and West Gore, but delays some of the cost of construction.	
14	New pedestrian/cycle structure (immediately upstream) (location C) Rationale: Provides new separate active mode connection close to the existing bridge.	

ID	Description	Graphic (Indicative)
15	New pedestrian/cycle structure (lining up approximately with Surrey Street) (location B) Rationale: Provides new separate active mode connection.	
16	New pedestrian/cycle structure (upstream lining up with approximately Maitland Street) (location A) Rationale: Provides new separate active mode connection.	

ID	Description	Graphic (Indicative)
17	New pedestrian/cycle structure (downstream) Rationale: Provides new separate active mode connection	

11.5 Combination Options

ID	Description	Graphic (Indicative)
18	Reallocate existing bridge space and install a new bridge (assume location B)	

ID	Description	Graphic (Indicative)
19	Lower speed limit on existing bridge and new bridge (assume location B)	
20	Install two new bridges	

11.6 Connections to existing Network

All options were assumed to provide a degree of linkage into the proposed pedestrian/cycle network detailed in Figure 4-4. The detailed nature of these connections will be considered further once a short list has been identified.

12. Assessment Criteria and Scoring

A multi-criteria analysis was used to assess the long listed options and reach a short list. Each option was assessed against the project's investment objectives, and against a set of criteria which are shown and described in Table 12-1. The criteria were developed in discussion with Council and Transport Agency representatives. A set of standard criteria were used as a starting point for discussion.

Table 12-1: Investment Objectives and Assessment Criteria

Investment Objective	Description
Investment Objective 1	Increase numbers of people who cycle and walk (40%)
Investment Objective 2	Minimise risk to public safety – improve safety for active modes (40%)
Investment Objective 3	Improve access between East and West Gore (20%)

Assessment Criteria	Description
Technical	How difficult is the design and construction? Includes consideration of geotechnical, structural, hydrological assessments.
	Are there any novel/untried/leading edge technologies involved?
	Are there any risks involved in developing or implementing this solution?
Consentability	What is the level of complexity in gaining statutory approvals and how significant are the costs of mitigation?
	Is any new designation required?
	Could the option include activities prohibited under policies and rules of the District or Regional Plan?
Operational/ Maintenance	Are there any factors that might affect the ability to operate or maintain the option over its projected life without major additional costs?
Financial	What are the relative estimated costs of the option in comparison with alternatives?
Customers/ Stakeholders	How acceptable is the option likely to be to the community?
	Are there real or anticipated objections from the community or stakeholders?
Natural Environment	To what extent does the option impact on the natural environment considered using an Environmental/Social screen?
	Are there any outstanding landscapes or natural features affected?
	Are there ecological areas affected?
	Are there any river or river margins affected?
Urban Design	To what extent does the option allow for urban design opportunities?
Wider Effects	Are there any positive or negative wider effects for the transport system, or other infrastructure networks? E.g. providing additional transport or other infrastructure network resilience and improved transport connectivity. The potential benefits for the provision of addition the Council's 3 waters infrastructure to improve security of water supply as part of any crossing has also been considered under wider effects.
Strategic Fit	How well does the option align with local and regional transport and other relevant strategies?
Economic	What impact does the option have on economic growth in Gore? E.g. effects on tourism, population growth, liveability.

The initial multi-criteria assessment used a 7 point score (-3 to 3), where the following scores were attributed:

Rating	Definition	Score
Significantly Positive	Significant positive impact, likely resulting in long term improvements	+3
Moderately Positive	Moderate positive impact, which may provide improvements and opportunities	+2
Slightly Positive	Minor positive impact	+1
Neutral	Similar impact to do-minimum	0
Slightly Adverse	Minor adverse impact, which can be mitigated or managed	-1
Moderately Adverse	Moderate adverse impact that may be managed or mitigated	-2
Significantly Adverse	Significant adverse impact with serious long term effects.	-3

The Do Minimum option was included for further evaluation to establish the baseline investment of improvements along the corridor.

13. Long List Assessment

13.1 Overview of Key Aspects

This section provides an overview of the key aspects of the initial technical assessment against the investment objectives and criteria. It highlights the main considerations identified by the technical and subject matter experts.

13.1.1 Active Mode Participation Investment Objective

As outlined in Part A, the existing bridge presents a restriction on access to the wider network and is likely to deter a significant proportion of active mode users (potentially up to 60% of cyclists).

The following general observations are made:

1. Any works that are likely to improve the perception of safety are likely to lead to an increased number of users, particularly cyclists.
2. A new independent structure is likely to be more attractive to new users, particularly if positioned on existing desire line between East Gore and Gore with good connections to the proposed pedestrian/cyclist network.
3. Improvements to the existing structure would require consideration of the connections to the existing network.
4. Good connections to the proposed pedestrian/cycle network would also be likely to increase the number of recreational users.

13.1.2 Safety Investment Objective

As outlined in Part A, the existing SH1 crossing presents a potential safety risk that is likely to detract from the use of the existing river crossing and any improvements are likely to result in increased use, particularly by cyclists.

The following general observations are made:

1. Although there is no recorded crash history, any options that reduce potential conflicts between vehicles and active mode users are likely to have safety benefits.
2. A new independent structure would provide an alternative to the existing bridge, which is likely to improve safety but needs to be connected to a safe network on either side of the bridge and provide good cross connections between journey origin and destination.
3. Improvements to the existing bridge would still present some potential safety problems regarding connections to the existing road network. Crossing points on the approaches to the bridge are not defined and the presence of the roundabout close to the end of the bridge is not ideal for cyclists.

13.1.3 Access Investment Objective

Access between East Gore and Gore is currently restricted to the existing SH1 Bridge that carries all traffic, including pedestrians and cyclists.

The following observations are made:

1. Improvements to the existing structure may not necessarily result in improved access given the adjacent State Highway and the potential need to cross this and negotiate existing relatively poor connections either side of the bridge
2. A new independent structure is only likely to result in improved access if located on the desire line between East Gore and Gore. If any new structure location results in extended journey lengths and journey times, it may not attract additional users.
3. A new independent structure, located on the desire line between East Gore and Gore, is likely to result in existing users diverting off the existing bridge and is also likely to attract new users.

13.1.4 Technical Criterion

13.1.4.1 Hydrology

The Mataura river is a significant river, and the secondary flood channel (flood plain) has been innundated several times in the last century. This river is constrained in the study area by stop-banks on both sides. The river is a natural hazard which must be well understood, and the design of any permanent works must reflect the significance of this hazard; ensuring that no unacceptable adverse effect is introduced, affecting the flood banks, or the existing bridge structure.

The placement of any structure within the flood plain will be subject to resource consent and it is likely that the application will need to be show the structure will not negatively impact flood flows.

13.1.4.2 Geotechnical

1. Geology

The prevailing geography and geology are well understood. Sandstone and mudstone bedrock is clearly visible in the stream bed for 1.5km upstream of the highway bridge, and is likely to be present at a similar level for some distance lateral to the river.

2. Future Investigations

Any shallow foundations may be susceptible to liquefaction, and if such structures are proposed, then investigations may need to quantify this potential.

Piled structures will require drilling investigations to assess bearing strength for design.

Any tension/cable anchorages into bedrock will require core samples to be tested for compressive and shear strength characteristics.

13.1.4.3 Structural Assessment

All options are considered technically feasible, but some will be more complex to implement than others. The following observations were made:

1. A new independent structure with one or both approaches located within the secondary flood channel would reduce the level of service provided by the crossing, as it would not be available if one or both approaches were inundated under flood conditions. Any structures would need to comply with the NZTA Bridge Manual[55] and be positioned clear of the specified flood return period level. Piled foundations are likely to be required and some, if not all, parts of the structure would need to be designed to cater for debris impacts.
2. A new independent structure with piers located in the flood channel would be likely to require piled foundations. Clear spans would be located clear of the flood channel.
3. A new structure attached to an existing structure (either the road or rail bridge). These would not require any disturbance to the flood channel but would be dependent on the ability of the existing structures to take any additional loads.

For the purposes of the multi-criteria assessment, all three scenarios were considered feasible but those with more elements located within the flood channel were considered more complex to design, therefore attracting a lower score.

13.1.5 Consentability Criterion - Property

In addition to the Planning and Environmental screen potential property impacts were considered under this criterion. A high level appraisal of the available property data was undertaken using Land Information New Zealand (LINZ) data. Figure 13-1shows the property boundaries in the vicinity of the project area. Of note are:

- The property ownership in the floodplain. North of Avon Street properties appear to extend into the floodplain on the western side of the river. This may need to be addressed if a bridge connection is located in this area.
- Triangular property located immediately west of the River Street/SH1 roundabout (identified in the Planning and Environmental Screen as designations D18 (NZ Police) and D32 (District Court) – this may need to be addressed if works occur at or near the roundabout.

[55] Bridge Manual SP/M/022 Third Edition, NZ Transport Agency

- The proximity of the residential boundary to the bridge at the north-eastern side of the bridge – this may be an issue if widening is required at this location.
- Paper roads are present across the flood plain in line with extension of Surrey Street, Denton Street and Richmond Street.

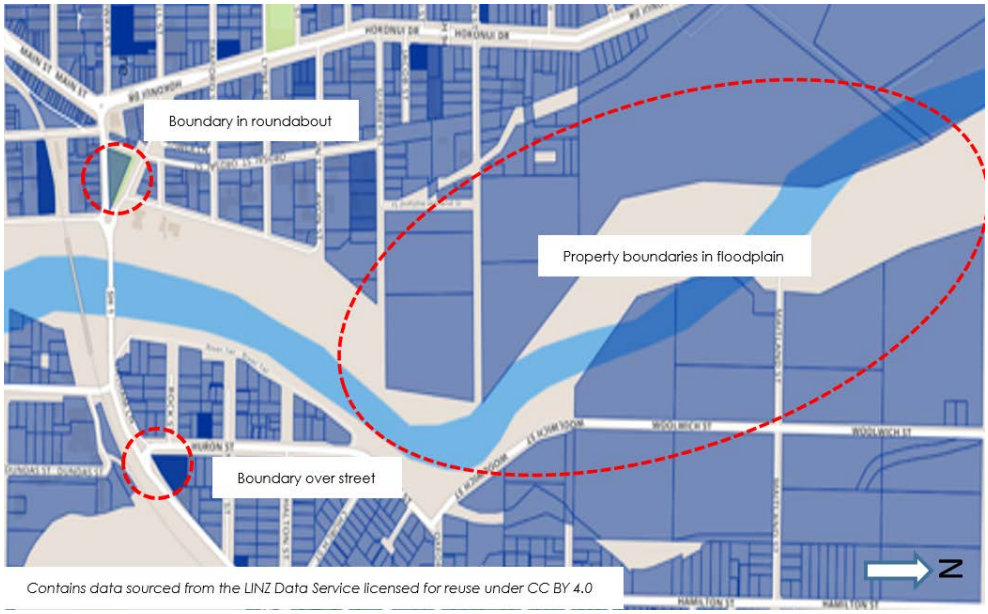


Figure 13-1: Property Data Map (Source: LINZ)

13.1.6 Operational/Maintenance Criterion

Different infrastructure will attract different operation costs and require maintenance to remain operational. For example, a new bridge structure is required to be regularly inspected. These inspections identify maintenance required to keep the structure in good condition and maximise its lifespan.

A comparative assessment of the estimated operational inputs was completed for the different options under this criterion.

Option 10 – The ferry service, was fatally flawed after consideration of ongoing operational and maintenance costs.

13.1.7 Financial Criterion

The relative estimated costs of the options were assessed. Options were fatally flawed where estimated costs were greater than $10m as this was considered unaffordable given the anticipated degree of benefits and current budgets available for the project. Options that included a new road bridge were fatally flawed for this reason.

13.1.8 Customer/Stakeholders Criterion

A public survey on the use and perceived safety over the existing bridge was undertaken by the Council using a survey posted on the Council's web pages. The survey was completed by 159 respondents. Results indicated that many cyclists cross the existing bridge using the footpaths rather than the carriageway. This puts them into conflict with pedestrians given the narrow footpaths. It also requires a reduction in speed to avoid any conflicts. A summary of the feedback received from the survey is included in Appendix B.

13.1.9 Natural Environment Criterion - Planning and Environmental Screen

No additional planning or environmental issues were identified following the formulation of the long list of options, aside from those described in Part A. Resource consents will need to be obtained for the recommended option and associated temporary works, following preliminary or detailed design, when greater certainty is known about the form and specific location of any structure proposed.

13.1.10 Urban Design Criterion

The urban design opportunities were considered in line with NZ Transport Agency's Urban Design Principles. These comprise designing for the context; integrating transport and land use; contributing to good urban

form; integrating all modes of travel; supporting community cohesion; maintaining local connectivity; respecting cultural heritage values; designing with nature; creating a positive user experience; achieving a low maintenance design. This grouped the long list options under two different scenarios:

1. A new independent structure and approaches would provide considerable opportunities to address and enhance all ten of the key elements of urban design outlined with NZ Transport Agency Bridging the Gap Urban Design Guidelines. These options therefore attracted higher scores.
2. Modifications to the existing bridge present some opportunities for enhancements in the look and feel of the existing bridge.

13.1.11 Wider Effects Criterion

At present there is only one land transport crossing the Mataura River, via the SH1 bridge. Online improvements to the existing bridge would not improve this situation or provide improved connectivity.

Independent structures have been ranked comparatively higher as they will provide improvement, and a degree of additional resilience to the existing network, at least for pedestrians and cyclists.

At some point, the Council may need to provide an additional water main across the Mataura River to strengthen the resilience of their water supply network. It would be financially beneficial to include any new water main crossing on an existing crossing rather than construct an additional structure. The shortest route for this water main crossing is approximately 1.1km upstream from the existing SH1 bridge. The further south any new or improved crossing is located, the greater the costs of the infrastructure required to install the new water main. This has been considered within the wider effects criterion.

13.1.12 Strategic Fit Criterion

The strategic fit compared options against the Strategic Alignment objectives in Section 9. These included:

- The Gore District Plan objective of keeping the existing transport network sustainable
- Gore's District 'Ready for Growth' project and Tourism Impact Statement, that seek to encourage growth in Gore
- Gore District Trails Feasibility Study which identifies a need for a better crossing of the Mataura River
- The Transport Activity Management Plan focus on making Gore more cycle friendly and creating a network of tracks, particularly for children travelling to school

Improvements to the existing structures to better accommodate active modes were not considered to be as strongly aligned against these criteria as a new independent structure that would provide linkages to the proposed pedestrian/cyclist network and create a track for learner cyclists and/or for recreational use by residents or tourists, which could contribute to growth.

13.1.13 Economic Criterion

Improvements to the existing structure were not considered to generate any benefits to economic growth with Gore.

Options that provided linkages on a desire line between East Gore and Gore were given a higher ranking given the potential connection to the Gore Heritage District and the CBD. These connections, together with connection to the proposed pedestrian/cyclist network may encourage greater tourist use.

13.2 Scoring

Scoring was completed as follows:

- The first stage of scoring was undertaken against the weighted investment objectives. Options that achieved a negative score for any of the three investment objective criteria were considered to have a 'fatal flaw' and rejected, with no further assessment undertaken.
- Low scoring options (the lower 50th percentile; those that did not achieve an aggregated investment objective score of above 180) were discounted.
- Each remaining option was then scored against the assessment criteria. Options where any of the assessment criteria were not achieved were considered to have a 'fatal flaw' and also discounted from further consideration.

- Each assessment criteria was multiplied by a factor of 10 to give a degree of separation, and the scores aggregated.

Options that resulted in a positive aggregated score were considered as short-listed options for presentation to stakeholders.

13.3 MCA Results

This section provides an overview of the MCA and provides the rationale for the decision as to whether exclude or short list the option. The full MCA is included in Appendix D.

Table 13-1 - Assessment Results (those short listed are highlighted in green).

Option	Description	Decision	Assessment/ Rationale for decision
1	Do nothing: No change to existing road layout or facilities. Maintenance, and other works already scheduled.	Excluded during investment objective screen	Option 1 did not address two of the investment objectives. Over time with any growth in traffic on State Highway 1 the identified issues are expected to get worse. This option, therefore, was excluded after the investment objective screen
2	Do minimum: Widening of footpaths/connections on either side of the river as funds become available; assumed improving crossings (either end of the bridge, underneath) Low cost, low risk projects. Pedestrian facilities.	Retained as Do Minimum for comparison purposes	Scores well against cost and ease of implementation and operational/maintenance criteria. However, few benefits anticipated, such as limited urban design opportunities, and no wider effects or economic impact benefits.
3	Reallocate existing bridge width, and approaches - Assuming bidirectional path on one side only	Excluded during investment objective screen	Some benefits anticipated in terms of the potential for an increase in the number of people walking or cycling and improving access between east and west Gore (however this will be minimal). However much of the other scoring resulted in either neutral or slightly positive or negative ratings. The construction, design, operation, and costs are all anticipated to be achievable, however stakeholder feedback anticipated to be somewhat negative. The option is not anticipated to have impact on wider effects, or the economy. Any construction around waterway anticipated to impact natural environment is assumed to be negligible. Urban design opportunities anticipated to be poor, but not non-existent. Overall the strategic fit anticipated to be slight.
4	Reduce speed limit on existing bridge	Excluded during investment objective screen	No benefits were identified following investment objective screen (neutral ratings on two of the three investment objectives).
5	Clip on facilities (one or both sides) to provide off carriageway shared paths, without any improvements to approaches	Excluded during investment objective screen	Some benefits anticipated, although there were also criteria that resulted in neutral or slightly positive or negative ratings. This option is anticipated to increase active mode users and perceived safety (on the bridge) and would improve access between East Gore and the rest of the township.

Option	Description	Decision	Assessment/ Rationale for decision
			Safety on the bridge is anticipated to improve as the cyclists will not have to share the live lane with vehicles. However, users would encounter existing problems as soon as they left the bridge. Technically the option can be achieved. At this stage it is assumed as possible but with slight negative rating. It has been assumed that consent will be required for temporary works and may be required for permanent works and therefore attracts a slightly negative score. Some additional maintenance assumed when rating this option and the cost assumed to result in slight negative. Some positive opportunities anticipated for urban design, and stakeholders anticipated to have mainly positive response. The strategic fit assumed as slight as it will not disrupt freight movement but will also improve active modes (but only at bridge). Will also provide better for active modes.
6	Clip on facilities (one or both sides) to provide off carriageway shared paths, with improvements to approaches	Short listed. Passes initial investment screen, positive score against criteria.	Some benefits anticipated that resulted in positive ratings. This option is anticipated to increase active mode users and perceived safety (on the bridge), and that access between East and West Gore would improve. The safety on the bridge is anticipated to improve as the cyclists will not have to share the live lane with vehicles. Improvements on the approaches would address some of the existing problems away from the existing bridge. Technically the option can be achieved. At this stage it is assumed as possible but with slight negative rating. It has been assumed that consent will be required for temporary works and may be required for permanent works and therefore attracts a slightly negative score. Some additional maintenance assumed when rating this option and the cost assumed to result in slight negative. Some positive opportunities anticipated for urban design. Positive stakeholder response anticipated. The strategic fit assumed as slight as it will not disrupt freight movement but will improve active modes (but only at bridge).
7	Widen the existing SH bridge to better accommodate active modes	Excluded during investment objective screen	Benefits anticipated, but most are minor. Negative ratings anticipated related to technical, consent, and natural environment risks. In rating this option, it was assumed that wider piers will be required therefore technical aspects are more difficult and also present a higher cost option that the clip-ons. The ratings for the investment objectives are anticipated to provide similar/same results as Online C Option (clip-ons). It was assumed customers will have positive response, and that given work in the waterway it was assumed to negatively impact the environment. The strategic fit, wider effects, economic impact all assumed to

Option	Description	Decision	Assessment/ Rationale for decision
			be similar to clip-on structure without associated improvements as it is unclear whether additional widening off the bridge would be feasible.
8	Install traffic signals at either end of the bridge and turn the bridge into a single lane arrangement	Excluded during investment objective screen	Negative investment objective of improving access between East Gore and the rest of the township as vehicle level of service between the two sides of the town would drop due to travel time delay.
9	Use existing rail bridge (clip on facilities)	Excluded following initial criteria assessment	Fatal flaw identified with the technical criteria because of the KiwiRail setback requirement from the railway line. Assumed bridge not due for replacement in next 10 years
10	Ferry service	Excluded following initial criteria assessment	Fatal flaw identified with operational and maintenance requirements, and financial criteria. A fatal flaw identified with the ongoing operation of this service. It was assumed that it would cost the Council to keep the service going and that associated maintenance would also be ongoing. A fatal flaw for cyclist customers and stakeholders was assumed due to the poor level of service.
11	New State Highway Bridge multi-purpose bridge (all modes)	Excluded following initial criteria assessment	Fatal flaw identified with financial criteria. A new State Highway alignment and bridge would likely be expensive. There is no known bypass or new bridge projects existing, or proposals. These would typically be generated in response to an unacceptable safety record, or other problems such as resilience, severance, or reliability.
12	New local road bridge (now)	Excluded following initial criteria assessment	Fatal flaw identified with financial criteria. A new local road alignment and bridge would likely be expensive. There are no known bypass or new bridge projects, or proposals. These would typically be generated in response to an unacceptable safety record, or other problems such as resilience, severance, or reliability.
13	New local road bridge (future) - designating new local road and in interim constructing new active mode bridge.	Excluded following initial criteria assessment	Fatal flaw identified with financial criteria because it was assumed that active mode bridge may need to be demolished resulting in greater cost, in addition to the larger bridge, which would also be expensive.
14	New pedestrian/cycle structure (immediately upstream) (location C)	Short listed. Passes initial investment screen, positive score against criteria.	This option had good benefits anticipated, which appear to outweigh the negative risks associated mostly with technical, consent, financial, and natural environment criteria. A new active mode bridge location C scored well for the investment objectives due to improved connectivity and safety of a new crossing. For a new bridge it was assumed that there would be a level of technical difficulty, that any bridge over the river will have consent risk, will incur new ongoing operational costs, and incur a significant cost to implement. Urban design opportunities were anticipated to be excellent due to position of the bridge. A new bridge also provides resilience benefit and aligns with relevant strategies. Overall the option was anticipated to have a positive impact on the economy.
15	New pedestrian/cycle structure (lining up	Short listed. Passes initial	This option also had good benefits anticipated, which appear to outweigh the negative risks

Option	Description	Decision	Assessment/ Rationale for decision
	approximately with Surrey Street) (location B)	investment screen, positive score against criteria.	associated mostly with technical, consent, financial, and natural environment criteria. A new active mode bridge location B was anticipated to score well for the investment objectives due to improved connectivity and safety of a new crossing. For a new bridge it was assumed that there would be a level of technical difficulty, that any bridge over the river will have consent risk, will incur new ongoing operational costs, and will incur a significant cost to implement. Urban design opportunities were anticipated to be excellent due to the position of the bridge. A new bridge also provides resilience benefit and aligns with relevant strategies. Overall the option was anticipated to have a positive impact on the economy. At this stage it is difficult to separate this option from Location C. However, there may be some change in the multi-criteria depending on what kind of bridge span was adopted. Nonetheless, at this stage, the only slight difference noted was that a bridge near the State Highway might be more marketable to Gore in terms of the economic impact.
16	New pedestrian/cycle structure (upstream lining up with approximately Maitland Street) (location A)	Excluded during investment objective screen	Much of the ratings are similar to options 13 and 14 above, however the benefits are anticipated to be less due to the distance from the main population base(s) – the location would not be on the main desire line between East Gore and the main urban area. Most other ratings are anticipated to be the same as Location C and B above due to similarity of proposal. However, customer stakeholder feedback is anticipated to be less due to the distance from trip generators.
17	New pedestrian/cycle structure (downstream)	Excluded during investment objective screen	Most of the ratings are similar to options 13 and 14 above, however the benefits are anticipated to be less due to the distance from the main origins and destinations.
18	Provide more space for active modes on existing bridge (reallocate bridge width) and install new bridge (assume location B)	Passed initial investment objective screen, excluded following criteria analysis	Good benefits anticipated, however these are outweighed by negative risks associated mostly with technical, consent, financial, and natural environment criteria. It is anticipated there would be a positive impact on investment objectives due to route choice provided and assumed safety of each. Therefore, this option has similar ratings to Location B and C new bridges except for the technical requirements; which are anticipated to be worse due to more work required), and the cost (due to more works being undertaken).
19	Lower speed limit on existing bridge and new bridge (assume location B)	Passed initial investment objective screen, excluded following criteria analysis	Good benefits anticipated, however they appear to be outweighed by negative risks associated mostly with technical, consent, financial, and natural environment criteria. It is anticipated that there will be a positive impact on all of the investment objectives due to route choice provided and improved safety for modes

Option	Description	Decision	Assessment/ Rationale for decision
			on each route. The option also has similar ratings to Location B and C except the cost (as more work is being undertaken). Customer/Stakeholder feedback anticipated to be neutral balancing the public reaction to reduced speed limit on the State Highway, the expenditure for improving two routes, but also the benefit of having two new routes. Otherwise natural environment, urban design, wider effects, strategic fit, and economic impact anticipated to be similar.
20	Install two new bridges	Passed initial investment objective screen, excluded following criteria analysis	Good benefits anticipated, however they are outweighed by negative risks associated with technical, consent, financial, and natural environment criteria. The option of installing two new bridges is anticipated to positively impact the investment objectives due to the route choice provided and the improved safety for modes on each route. The major impacts are due to the technical, consent requirements, and cost of building two new structures. This option is not anticipated to fit as well with the strategic documents due to the expected cost. It is anticipated stakeholders and customers would have a negative response due to the cost of providing multiple new crossings. The wider effects, however, are anticipated to be excellent as there will be multiple crossing points provided. The economic impact anticipated to be similar to other new bridge options (more bridges assumed to not add more economic value in this regard).

14. Short-Listed Options

The result of the multi-criteria assessment was that the following options were short listed for further investigation:

Option 2: Do minimum – retained for comparison purposes only

Option 6: Clip on facilities on one or both sides of existing SH1 bridge, and widen approaches

Option 14: New pedestrian and cycle bridge at location C, just upstream from existing crossing

Option 15: New pedestrian and cycle bridge at location B, about 1km upstream from existing crossing

The approximate location of the shortlisted options are shown in Figure 14-1.

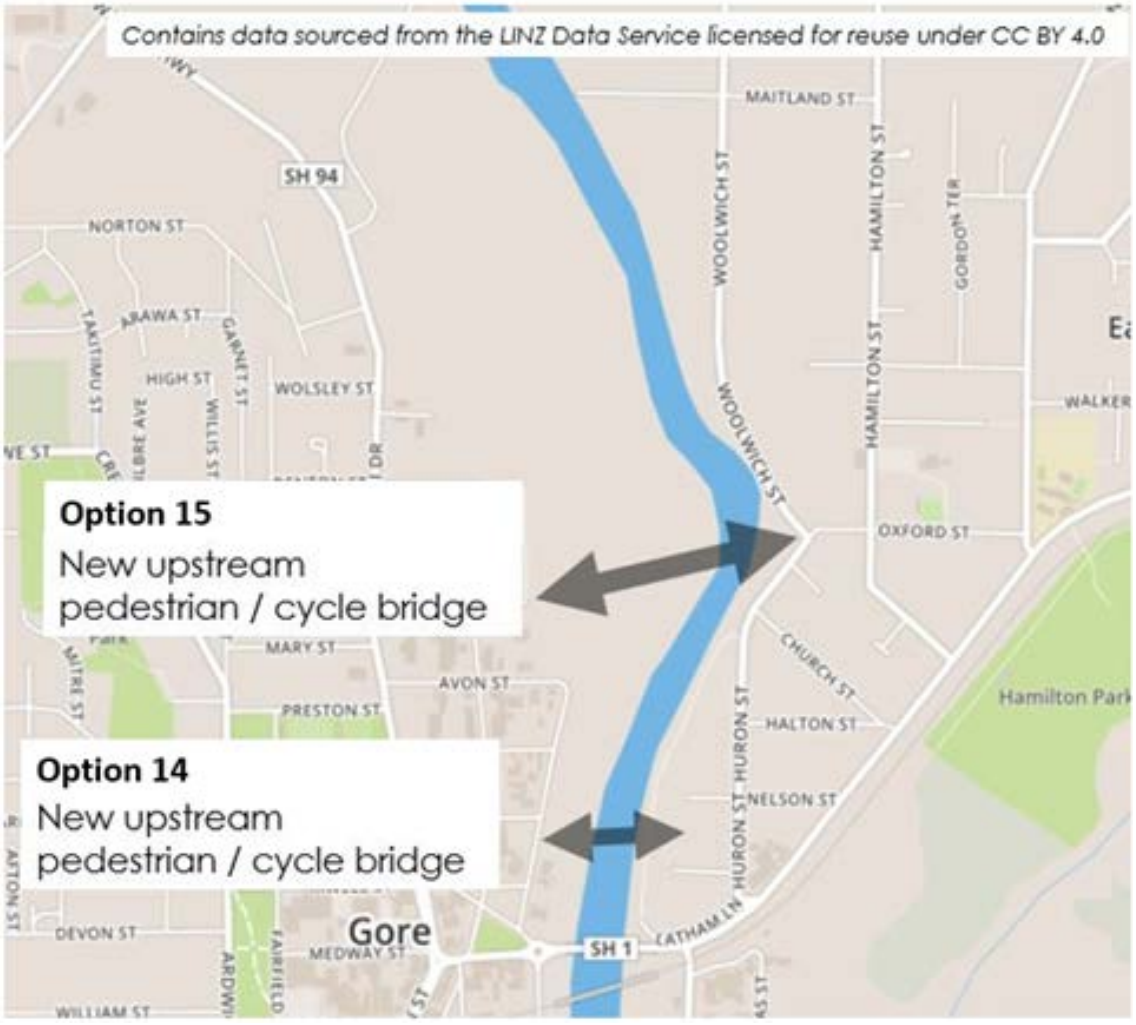


Figure 14-1: Shortlisted Options

15. Shortlist Consultation

The long listing assessment and three shorted options, Option 6, Option 14 and Option 14 were presented at a stakeholder workshop held in November 2018 attended by 14 representatives from 6 organisations. The feedback received on the shortlisted three options is included in Appendix E. In summary:

- There was good alignment between the stakeholders that an improved crossing of the Mataura River was required and is likely to attract additional users.
- An independent crossing was preferable to improvements on the existing bridge.
- A new crossing with connections to the proposed pedestrian/cycling network would be beneficial.

At the end of this workshop the stakeholders agreed that Option 6, the online option of clip-on facilities should be discounted because:

- The route is not on the desire line and does not align with the cycle network strategy.
- It would not drive behaviour change and increase cyclist numbers, because cyclists would still interact with high volumes of state highway traffic, including freight.
- Cyclists would still need to use the intersections in the vicinity of the bridge which include roundabouts, which do not currently provide for cyclists.
- It would not provide the transformational change necessary to achieve mode shift towards active modes.
- There is an opportunity to provide a positive recreational experience with an independent structure.
- There is an opportunity to provide additional resilience with an independent structure.

These views were supported by the community survey (Appendix B), which showed that many people have concerns about active mode users on the bridge, and that some who cycle use the footpath, leading to concerns about safety of pedestrians.

It is also clear that the existing bridge is not on the direct desire line between East Gore and Gore.

There was no confirmed preference expressed by stakeholders between the two remaining options, Option 14 and Option 15. A range of considerations were discussed.

16. Scope of Short-Listed Options

The two shortlisted options were further assessed with inputs from technical specialists to provide initial concept designs for viable crossings at the two shortlisted locations.

The details of the concept designs are outlined below. For both shortlisted locations designs were developed that included:

- Connecting paths to the proposed pedestrian/cycle network, including the provisions of streetlights.
- Consideration of the layout of structural components and location of piers and approach ramps.
- River flood levels at crossing locations for 1 in 25 year Average Return Interval (ARI) flood.
- Minimum bridge levels required to comply with the NZTA Bridge Manual and design flood including provision of a 1.2m freeboard above the 25 year ARI flood level to minimise flood debris snagging on the bridge.
- Cost estimates for construction of the options.

Note: The remainder of the route providing connection to the schools and other destinations was not included as this will be constructed using low cost treatments such as parking adjustments, painted lines, crossing treatments and sharrows as appropriate (refer Appendix C).

Note: The structural form of the main bridge spans was not considered in detail at this time as it was anticipated that any options selected will be subject to further consultation following preliminary design.

Concept designs were informed by a topographical drone survey of the site completed in 2018. The survey was tied into ground control providing a good degree of certainty regarding existing levels.

16.1 Option 14: A new pedestrian and cycle bridge at Rock Street, around 100m upstream from the existing crossing

This option has been developed into a 3m wide shared pedestrian/cyclist crossing comprising:

- A bridge with a clear span of approximately 94m over the Mataura River with a minimum bridge soffit level of 74.6m (73m 25yr ARI + 1.2m clearance+ 0.4m increase due to highway bridge effects), crossing the river perpendicularly with piers on the river banks.
- Two smaller approach spans of 29m from on the top of the floodbank on the west side and 25m on the east side landing on the existing bank at the end of Rock Street. These approach spans are considered to be more economic solutions than providing ramps down to the river bank on the west and River Terrace on the east.
- At the east end, an at grade footpath/cycle path connection to Rock Street with a path on an earthworks ramp from the end of the bridge at Rock Street to River Terrace.
- At the west end, a path along the top of the stopbank and ramp to connect with Richmond Street.
- Bridge lighting incorporated into the handrails of the structure and streetlighting on the approach path.

Options 14 is illustrated on Drawings 80510426-01-001-C001 and C004 included in Appendix F.

16.2 Option 15: A new pedestrian and cycle bridge at Surrey Street, about 600m upstream from the existing crossing

This option has been developed into a 3m wide shared pedestrian/cyclist path comprising:

- A bridge with a clear span of approximately 73m over the Mataura River with a minimum soffit level of 75.3m (73.7 25yr ARI +1.2m+ 0.4m increase due to highway bridge), crossing the river perpendicularly adjacent to the end of Church Street on the east bank. The soffit level of the bridge has been increased to 76.0 m to match the top of the stop bank on the east end.
- An additional approach span of approximately 21m from the top of the stopbank and the flood plain on the east side. This is considered more economic than providing ramps down to the flood plain level.
- A combination of earthworks and 30m of structural ramps between the flood plain and the clear span on the west bank of the river. The footprint of the approach ramp would be aligned parallel with the river to minimise obstructions in the flood plain.

- 280m of 3m wide hard surfaced shared path, at grade path across the flood plain to the west of the river, crossing the flood plain on the line of the existing Surrey Street and Richmond Street paper roads.
- Fencing either side of the path across the flood plain.
- One small additional culvert required to cross an existing flood channel.
- Modifications to the existing stopbank earthworks on the west side to provide a graded path from the top of the stopbank at Avon Street to the flood plain.
- 260m of 3m wide hard surfaced shared path along the top of the stopbank adjacent Huron Street.
- Lighting incorporated into the handrails of the main span, approach span and ramps and streetlighting on the approach paths.

Option 15 is illustrated on Drawing 80510426-01-001-C002 and C005 included in Appendix F.

16.3 Shared Path Connections

Figure 16-1shows the full extent of the final shared path network.

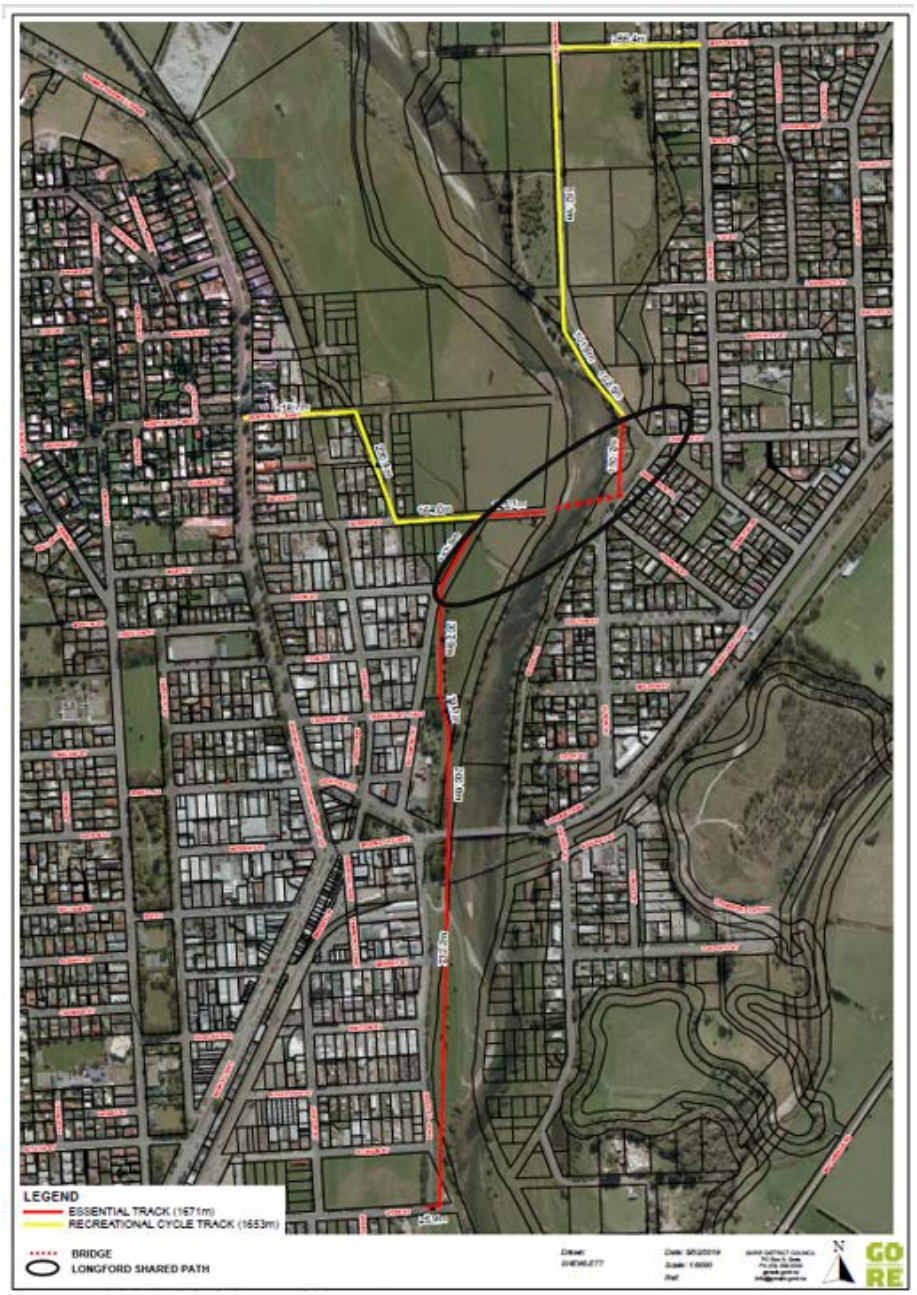


Figure 16-1: Full extent of proposed Shared Path river network, and Longford Shared Path

17. Short List - Further Technical Assessment

A comparative assessment of the concept designs for shortlisted Options 14 – Rock Street and Option 15 – Surrey Street, undertaken by Stantec technical specialists, is detailed below.

17.1 Connections to existing and proposed pedestrian and cycling networks

- Both options provide improved connections for pedestrians and cyclists travelling in a north east to south west direction (and visa-versa) between East Gore and the CBD areas and senior schools. Both options are on an acceptable 'desire line' and will attract users.
- Option 14 – Rock Street is closer to the CBD that may make it more attractive to commuters.
- Options 15 – Surrey Street is closer to the geographical centre of population in East Gore which may make it more attractive.
- Option 14 – Rock Street, provides a connection to River Terrace on the east side of the river and a direct connection to Rock Street. On the west side it links to the proposed shared path network and has close connections to Irwell Street and the proposed Heritage Precinct, library and museum.
- Option 15 – Surrey Street, provides a direct connection to River Terrace on the east side of the river and connections to the proposed shared path network on the west side of the river.

17.2 Structural Considerations - General

- Option 14 – Rock Street, the proposed bridge main span at 94m presents some challenges. The side spans are relatively straightforward and could be designed to complement the main span. To avoid an exceptionally deep and 'heavy' looking structure, it is likely that a complex structural engineering solution, in the form of an arch, stressed ribbon or double pylon cable stayed bridge would be required to support this length of clear span. The main span could be reduced by approximately 15m by moving the piers closer to the river. This would likely require additional consenting and rock protection work and increase the length of the side spans. The governing design criteria over this length of bridge is the dead weight of the structure itself and the need to prevent excessive vibration from people crossing the bridge.
- Option 15 – Surrey Street, the proposed bridge main span at 73m still presents challenges similar to those outlined above although slightly reduced in scale due to the shorter span length. The main span could also be reduced by approximately 15m by moving the piers closer to the river banks with the same issues outlined above. The side span at 21m would be relatively straightforward but the ramp at the west end would need to be designed to cater for potential inundation from flood water and potential collision loads from debris.
- Option 14 – Rock Street, the bridge soffit is approximately 2.9m above the adjacent river bank on the west side and 3.3m above the adjacent river bank on the east side. This would provide enough clearance for River Terrace and River Street to pass beneath.
- Option 15 – Surrey Street, the bridge soffit is approximately 2.9m above the adjacent river bank on the west side and 3.3m above the adjacent river bank on the east side. This would provide enough clearance for the existing pedestrian/cycling path to pass underneath. On the west side a minimum of 60m of ramp would be required to get from the bridge to the flood plain. Half this length could be constructed from earthworks leaving the remaining 30m as structural ramps.

17.3 Structural Requirements – Seismic

- For both options, relatively tall piers will be required that will rely on restraint at the ends of approach spans to satisfy seismic requirements

17.4 Structural Requirements – Geotechnical

- Piled foundations or suitably deep spread footings will be required beneath the bridge piers for both options. Where abutments sit on stopbanks the piles will need to extend through the stopbanks to sound material below.

- Currently no information is known about details of the stopbanks and no detailed geotechnical investigations have been undertaken at pier locations. This will be required to be undertaken prior to development of the preliminary design.

17.5 Resource Consenting

- For both options resource consents will be required for earthworks and structures (bridge, piers and bank seats) in the floodway of the Mataura River (this being the area between the stop banks and the river or approximately half way up the terrace face adjacent to Rock Street).
- Resource consent to modify any stop banks may also be required.
- For Option 15 – Surrey Street, within the resource consent application, consideration will be given to the potential effects of the embankment and ramps on the diversion and deflection of flood waters within the river floodway, including the effects of flooding during both the construction and operational phases.
- For both options, restrictions on construction (such as times of day, stockpiling and staging areas, refuelling and maintenance of mechanical plant, noise, dust generation etc.) may be imposed due to the proximity to residential areas, and the potential effects of interaction with the river (spillages, discharges, erosion and sediment migration, stormwater, river flooding etc.).
- Resource consent applications should be submitted once the design has been sufficiently developed.

17.6 Ecological

- For both options, some restrictions with regard to discharges to/effects on the quality of the river (water) and habitat may be likely given the status of the river (protected by a National Water Conservation Order) and the known ecological and sport fishing values,

17.7 Cultural

- The Mataura River is a statutory acknowledgement area of Te Rūnanga o Ngai Tahu. Initial discussions have been undertaken between Council staff and iwi. Further consultation will be completed in the next stage.

17.8 Land Ownership

- Option 14 – Rock Street, the crossing aligns with Rock Street. an existing highway at the east end. At the West end the abutment is located on the stop bank that appears to be part of the River Street paper road and under Council ownership.
- Option 15 – Surrey Street, the crossing follows the alignment of Surrey Street that continues as a paper road across the flood plain. The connecting path on the west bank of the river is aligned with River Street, another paper road in Council ownership. At the east end the abutment is located at the end of Church Street on River Terrace all under Council ownership.

17.9 Hydrological

- Option 14 – Rock Street, a minimum bridge soffit height of 74.6, should to comply with NZTA Bridge Manual. Due to narrower channel than upstream flow will be faster at this location (under flood conditions) than upstream and subsequently lateral forces on bridge will be greater. These will need to be considered during detailed design. Bridge piers will need to be hydraulically assessed during detailed design.
- Option 15 – Surrey Street, a minimum bridge soffit height of 75.3m should to comply with NZTA Bridge Manual. The wider flood plain at this location will result in lower velocity flows. The ramps located in the flood plain will present an obstruction during flood flows that will need to be hydraulically assessed during detailed design.
- Option 15 – Surrey Street, the level of service for the approach paths on the west side of the bridge are likely to be inundated by flood water under a 1 in 10-year event.
- For both options, permanence/erodibility of the existing low-flow stream banks should be considered when placing approaches. Armouring/protection measures may be required and should be assessed during detailed design.

17.10 Urban Design

- Option 14 – Rock Street, the Bridge will be highly visible from the existing State Highway bridge and riverside paths. This will add to the attraction in using the bridge, in terms of surveillance in Crime Prevention Through Environmental Design (CPTED) guiding principles. Co – locating the bridge near the existing state highway bridge will promote legibility in the landscape, also a sense of familiarity and reference point for potential users. The bridge connects between the existing bike path and the CBD (already local destinations with common uses) and directly to residential area on the eastern side of the river. The bridge also connects both sides of the longitudinal river pathway. The location is within the urban environment (public realm) and opportunities to incorporate design features into the bridge form (where the bridge becomes an art feature in itself) and / or finishing treatments (surfacing, hand / cycle grab rails, parapet finish, art etc.), approaches and illumination, both internal and externally exist. These features will add to the visual amenity if detailed well. Relatively short crossing length of 160m is likely to encourage greater use.
- Option 15 – Surrey Street, Bridge will be visible from riverside paths, but away from the bulk of existing residential development and away from the CBD. This location could be seen to extend journeys and be perceived as a barrier. Location considered to be largely rural, and away from key destinations. The arrival point on the western bank is at the back of an industrial site. A lack of amenity can also be a barrier to use. Opportunities existing to incorporate some features into the bridge form and approaches. External illumination would not be recommended. The bridge and path will need to be illuminated across full extent of flood plain that will introduce artificial lighting into this otherwise rural environment. The crossing is more exposed and may detract from its use in winter and during bad weather. There may be an opportunity to introduce a viewing platform at the western pier to the river landscape upstream.

17.11 Financial

- Option 14 – Rock Street, a base estimate for the construction of the bridge and shared path connections to the wider proposed network, associated works and design and construction management has been calculated as $5.46m with a lower confidence level of $4.9m and upper confidence level of $7.1m.
- Option 15 – Surrey Street, a base estimate for the construction of bridge and shared path connections to the wider proposed network, associated works and design and construction management has been calculated as $5.15m with a lower confidence level of $4.6m and upper confidence level of $6.7m.

17.12 Final MCA Scores for Short List

Using the further technical assessment gave the refined MCA scores shown in Figure 17-1.

		Investment objectives				Multi-criteria											
ID	Details	Increase numbers of people who cycle and walk	Minimise risk to public safety - improve safety for active modes	Improve access between East and West Gore		Technical	Consentability	Operational / Maintenance	Financial	Customers / Stakeholders	Natural Environment	Urban Design	Wider effects	Strategic Fit	Economic	**Weighted Investment Objectives**	**Other criteria total**
14	**New structure at Rock Street**	**2**	**2**	**2**		**-2**	**-2**	**-1**	**-3**	**3**	**-3**	**3**	**2**	**3**	**2**	**200**	**20**
15	**New structure at Surrey Street**	**2**	**2**	**2**		**-2**	**-2**	**-1**	**-2**	**3**	**-3**	**3**	**3**	**3**	**2**	**200**	**40**

Figure 17-1: Final MCA Assessment

The Investment Objective scores for both options did not change from the long-list assessment. This shows that both Options are robust and make a strong contribution to the Investment Objectives.

However, a more detailed evaluation of the remaining criteria resulted in a differentiation between the two shortlisted options. The criteria assessment for Option 14 scored 20, whilst Option 15 scored 40.

Differences in scoring were considered appropriate against the Customer and Stakeholder, Wider Effects and Strategic Fit Criteria. A summary of the criteria evaluations is provided below.

Technical

Both options were considered of similar complexity from a technical delivery perspective. Both options will require technically complex solutions for the main bridge spans given their lengths. From a geotechnical perspective both options are considered to present the same challenges. An MCA score of -2 was assigned to both options.

Consentability

Both options will be subject to similar consenting requirements and are likely to need to comply with similar conditions. An MCA score of -2 was assigned to both options.

Operation and Maintenance

Both options involve the construction of new long span bridges. These will be subject to similar inspection regimes and present the same challenges when future maintenance works are required.

Option 15 may incur additional maintenance if affected by periodic flooding. However, this was not anticipated to be significant enough to differentiate between the options. An MCA score of -1 was assigned to both options.

Financial

Concept level costs estimates for the design, construction and construction management of both options were developed using bottom up estimates. A breakdown of the estimated costs for both options is provided in Appendix G.

The project estimate for Option 15 - Surrey Street is $5.15m and for Option 14 – Rock Street is $5.46m. This is 6% difference. An MCA score of -2 was assigned to the lower cost option (Surrey Street), and -3 to the higher cost option (Rock Street).

Customer/Stakeholder

An MCA score of +3 was assigned to both options. This was based on the feedback from the group exercise completed at the stakeholder workshop. All groups felt clip-on facilities were not appropriate, and that a new crossing was required.

Natural Environment

Both options were considered to have impacts on the natural environment, particularly during construction. These would need to be mitigated. The impacts of the permanent structures on the natural environment are similar. An MCA score of -3 was assigned to both options.

Urban Design

Both options were considered to present urban design opportunities but the focus of these would be very different given the locations and surrounding landscape in the vicinity of the crossings. An MCA score of +3 was assigned to both options.

Wider Effects

For wider effects, Option 14 Rock Street was given a +2, and Option 15 Surrey Street was given a +3. This is because both options are positive in terms of providing added resilience to the existing transport network, but the Surrey Street option also offers the opportunity for the Council to more efficiently utilise any new crossing to carry a water supply pipeline between East Gore and Gore at some point in the future, as a possible crossing would be in a more direct location.

Strategic Fit

Both options were given an MCA score of +3, as they both align closely with Council strategies which advocate for the creation of the proposed pedestrian/cyclist network that included the linkage of riverside trails, i.e. Trails Feasibility Study, Bridge Project, Riverside Project. In addition, both options align with the GPS focus on making urban areas more liveable through transportation improvements and specifically in providing for active modes, particularly for commuters and for students travelling to school.

Economic

Both options were considered to have economic benefits in terms of improved liveability within Gore and their potential to attract more tourists to the town or make those visiting stay longer.

An MCA score of +2 was assigned to both options.

18. Value for Money

18.1 EEM assessment

An assessment of the benefits for the project has been undertaken in accordance with Section SP11 of the NZTA Economic Evaluation Manual (EEM).

As no cyclist or pedestrian count information is available for the existing bridge, the following assumptions have been used in this assessment.

18.1.1 Existing Users

- There are many similarities between the two shortlisted options and both are both considered to cater for the majority of anticipated north east to south west (and visa-versa) that are anticipated.
- Assessment of recent 2013 census information showed that a large proportion of commuters within Gore (East, West, Central and South) travel over the existing SH1 bridge (60% of those commuting out of East Gore and 51% of those travelling in to East Gore). 312 commuters left East Gore to travel in to West, Central and South Gore, whilst 69 commuters travelled in to East Gore from West, Central and South Gore. This equates to 381 daily journeys over the bridge in both directions from users of all modes.
- The census indicated the percentage of cyclists within these five census areas at 1.8%. This equates to 6-7 commuters cycling over the existing bridge. However, applying the EEM worksheet SP11-7 (that can be uses in the absence of count information) a figure of 24 existing cyclist commuter movements has been adopted, giving 48 trips per day.
- Longford Intermediate, St Peter's and Gore High School are all located in Gore. The 2013 census indicated that 105 children aged 10 to 14 and 93 aged 15-19 live in East Gore. Recent government documentation indicates that 78% of those aged between 15 and 19 will remain at school. This equates to 73 students between 15 and 19. Assuming all those living in East Gore and attending school will cross the existing bridge to get to one of the three schools equates to a total of 178 students.
- A study of intermediate school children assessed the proportion of children cycling where no specific facilities existed at 8.6%. This would equate to 15 children.
- Combining the existing commuters (24) and school users (15) gives 39 existing users that would equate to 78 trips, back and forth over the bridge.
- The census indicates the percentage of people who walk to work within these five census areas at 7.4%. This equates to 28 pedestrian commuters using the existing bridge making 56 trips back and forth over the bridge each day. In addition, the Ministry of Transport survey (2010-14) indicated 28% of secondary school students walk to school. Given the distances involved a more conservative figure of 20% has been used, to estimate 36 students walking to school. This gives a total of 64 existing pedestrians.
- Existing users are summarised in Table 18-1.

Table 18-1: Existing Bridge Users

	Total	Cyclists	Pedestrians
Commuters	381	24	28
School children	178	15	36
Total	559	39	64

18.1.2 Future Users

- Applying the EEM calculation from worksheet SP11-7 to the supressed demand gives a value of 13 additional commuter cyclists who would use the new facility. It is considered that current EEM often underestimates the additional demand therefore the approach outlined below has been adopted.
- Assuming that these 13 commuter cyclists represent the 15% of the top two confident cyclist categories as outlined by Dill and McNeil (2012) and suppressed demand is in the order of 60%, the potential number of suppressed commuters could be in the order of 52 cyclists per day.
- It is anticipated that a new crossing would attract more school children to cycle. The journey to school is not included in the census figures. The same Transport Agency report, as referenced above,

indicated that the maximum theoretical numbers of school children cycling when good facilities are provided, could be as high as 44%. This would equate to a total number of students from both the intermediate and high schools cycling across the bridge at 78 cyclists. This equates to 63 new cyclists.

- As the new bridge would be more attractive to use than the existing it has been assumed that 90% of the existing users would be likely to use the new bridge in preference to the existing.
- Using these assumptions, the total number of potential new cyclists could therefore be in the order of 115, all of whom would use the new bridge, plus diversion of 90% of cyclists using the existing bridge (35) to give 150 additional cyclists per day crossing on the new bridge – this equates to 300 trips per day across the new bridge.
- It has been assumed that the travel time between East Gore and Gore would not change significantly between the existing and new crossing options as the length of journey remains almost identical. However, there may some minor improvements due to absence of traffic conflicts and junctions to negotiate but these have not been evaluated.
- The Council Trails Feasibility Study that anticipated between 50 to 100 users of the East and West Gore Trails. Higher and lower numbers were considered as part of the sensitivity analysis, but the higher number was used in the assessment. It was also assumed that 70% of the existing bridge users would divert to the new bridge given the more direct north-east to south-west desire line, despite the similar route length.
- A summary of the number of people using active modes to cross the river now, and in the future, (following construction of the new bridge) are summarised in Table 18-2 below. This shows 103 people cross the river now using active modes and 318 in the future, a 300% increase.

Table 18-2: Summary of Current, New and Future Active Mode Users Crossing the River

	Current Users			New Users			Future Users
	Cycling	Walking	Total	Cycling	Walking	Total	
Commuter numbers	24	28	52	52	-		-
School children numbers	15	36	51	63	-		-
All people using active modes to cross river	39	64	103	115	100	215	318
All active mode trips crossing the river	78	128	206	230	200	430	636

18.1.3 Benefits

The EEM provides guidance on the derivation of economic benefits based on safety, travel time and health and environmental improvements from increased cycling and walking journeys. Benefits have been calculated assuming average trip lengths of 3km for cyclist and 2.5km for pedestrians. This is based on the distance from the centre of the population of East Gore (estimated from the East Gore census meshblock), to the CBD (estimated from the Central Gore census meshblock). It is noted that the bridge only represents a small part of this journey, however it is the 'weakest link' – the part of the route that is most likely to deter people from using active modes. For this reason, it is considered reasonable to use the complete journey distance that would be undertaken by current users who are likely to adopt the new crossing and the suppressed demand from new users whose journeys will be enabled by any improved crossing.

For these benefits to be fully realised, works to the proposed pedestrian/cyclist network would also need to be completed. Given that these works are currently being undertaken or will be undertaken as part of low risk/low cost improvements to the existing network, they will not be funded through this business case. It is therefore considered justifiable to include the benefits of the full route between East Gore and the Gore that will be facilitated by the provision of an additional crossing.

18.1.4 Safety

In the absence of any specific crash data, safety benefits have been calculated using Form SP11-5 from the EEM. Benefits are derived from the number of new and existing trip completed.

The annual safety benefits for cyclists have been calculated as $8,937 for both Option 14 and Option 15.

In addition to these monetised benefits the new crossing will provide a quantifiable increase in the Level of Service (LOS) for users. As outlined in4.1.1.3, using the Austroads assessment the LOS over the existing SH bridge has been assessed at service rating of D – E for cyclists. As the new crossing provides a traffic free alternative to the existing crossing, the service rating would increase to LOS rating A. This is likely to make

this crossing attractive to less confident users and relatively safe for novice cyclists. It is also likely to encourage new trips, particularly recreational riders.[56].

A LOS assessment, applying the criteria produced by Austroads Research Report AP-R475-15[57], comparing the existing crossing and Option 15 is included in Appendix I.

18.1.5 Travel Time

The travel time benefits have been considered using Form SP11-4 from the EEM. Benefits are derived from the numbers of pedestrians and cyclists affected by the improvement and the potential difference in journey time and route attractiveness.

However, given that the length of route journeys under consideration are between East Gore and Gore, the addition of a new crossing at either location, when compared to the existing bridge, does not significantly change. It has therefore been assumed that the journey length remains the same and subsequently there will be no travel time benefits.

Some benefits can be derived for cyclists based on the improved attractiveness of the journey. Pedestrians do not attract benefits from this factor.

There is no difference in the attractiveness of the two routes considered and a route attractiveness values of 1.83 for Option 14 and 1.84 for Option 15 determined from Table SP11.1 of the EEM.

The annual travel time savings for pedestrians have been calculated as $0 both options.

The annual travel time savings for cyclists have been calculated as $18.9k for Option 14 and $19.0k for Option 15.

18.1.6 Health and Environmental Benefits

The health and environmental benefits have been calculated using Form SP11-5 from the EEM. Benefits are derived through consideration of the additional journeys expected for pedestrians and cyclist.

The annual health benefits associated with cycling and walking have been calculated as $853k for both options.

18.1.7 Total Benefits

The total annual benefits for cyclists and pedestrians for both has been calculated at $1.06m.

Over the 40-year evaluation period the total benefits for both Options total $15.1m.

18.2 Costs

When calculating the BCR, the overall design and construction costs, together with routine and periodic maintenance costs, are included and assessed over a 40-year period. With discounted rates applied to these totals, the cost used in the BCR calculation to compare against the assessed benefits is $4.66m.

Cost estimates for both Options have been determined using 2018 as the base year. These include the construction costs previously outlined, together with estimated design and construction management costs, annual routine maintenance costs and periodic maintenance costs. The design, routine maintenance and periodic maintenance costs have been assumed to be similar for both Options 14 and Option 15.

The following implementation times have been used in the calculation of overall project costs:

- Design has been assumed to occur in Year 1 (2019) with an estimated cost of $506,000.
- Construction has been assumed to occur in Year 2 (2020) with costs for the options as previously outlined.
- Routine maintenance has been assumed to be undertaken annually with an estimated cost of $2,000 per year.
- Periodic maintenance has been estimated at $20,000 undertaken every 10 years.

[56] Cycle Network and Route Planning Guide – NZ Transport Agency, 2004
[57] Level of Service Metrics (for Network Operations Planning) – Research Report AP-R475-15, Austroads, 2015

In accordance with the EEM a 6% discount rate and a 40-year evaluation period has been used to determine the total costs.

The discounted costs for the options, when considered over a 40-year evaluation period, have been calculated as:

- Option 14 – Rock Street, $4,934,021
- Option 15 – Surrey Street, $4,654,687

Design, construction management costs, annual and periodic maintenance costs have been included and discounted over 40 years to give the above figures.

Within the economic evaluation a value of $0 has been assigned to the 'Do Nothing' option as no direct cost have been assigned to the maintenance of the existing crossing. This is a conservative approach and will result in a potential underestimate of the benefit cost ratio. However, this has been used to provide a baseline, worst case scenario figure. Further investigations in to the costs associated with the maintenance of the footpaths on the existing bridge are not readily available and cannot easily be extracted from the overall costs of maintaining the existing state highway bridge structure.

18.3 Benefit-Cost Ratio

The following benefit cost ratios have been determined for the short-listed options. Calculation for the BCR are provided in Appendix H.

Table 18-3: Short Listed Option BCR's

	Benefit	Net Cost (over 40 years)	BCR
Option 14 - Rock Street	$15.1m	$4,9m	3.07
Option 15 - Surrey Street	$15.1m	$4,6m	3.25

18.4 Sensitivity Analysis

Numerous assumptions and estimates are used when forecasting future project costs and benefits. A sensitivity analysis tests a range of scenarios using upper and lower bounds of key variables. The analysis also adds rigour to the economic analysis and tests the validity of the results. A range of sensitivity tests has been undertaken for a few key assumptions for the recommended option only.

18.5 Wider benefits

There will be additional benefits that are difficult to effectively quantify and that are not valued/assessed through application of the EEM methodology but have been considered within the MCA. These may help to define the recommended option over and above purely economically quantifiable benefits.

The benefits of these intangibles may be significant, and include:

- Stakeholder preferences.
- Tourist activity provided by provision of a walking/cycling shared path and bridge crossing
- Recreational activity provided by a shared path.
- Short trips not covered in the EEM e.g. to the shops, social, and associated health/quality of life benefits.
- Potential use of the crossing for other Council infrastructure.

19. Recommended Option

The MCA and Value for Money assessments show that Option 14 and Option 15 are both are well aligned with the investment objectives, technically feasible, and offer similar benefits and value for money.

However, in terms of wider benefits (intangibles) considered in the MCA assessment, Option 15 – Surrey Street was determined to provide slightly greater benefits than Option 14 – Rock Street as this option will:

1. Be more affordable and offers better value for money, with a discounted cost of $4.6m compared to a discounted cost of $4.9m for Rock Street. As expected, the BCR's reflect this, with 3.25 for Surrey Street and 3.07 for Rock Street
2. Provide the opportunity to cater for improve resilience of 3 Waters infrastructure if required in the future, such as a new water supply pipeline between East Gore and Gore. Utilising the Rock Street bridge would incur significantly higher costs for any water pipeline than the Surrey Street option, due to increased length of pipe required.

Option 15 – Surrey Street has been assessed as the recommended option that should be considered for progression to the next stage. Initial consultation has occurred between the Council and Te Rūnanga o Ngai Tahu. Additional community consultation will be completed during the next stage.

Part B(ii): Recommended Option

20. Recommended Option Design

20.1 Longford Shared Path - Scope

- The recommended option, Option 15, is located approximately 900m upstream from the existing SH1 bridge. The scope is of the Longford Shared Path is: A bridge with a clear span of approximately 73m over the Mataura River with a minimum soffit level of 75.3m (73.7 25yr ARI +1.2m+ 0.4m increase due to highway bridge), crossing the river perpendicularly adjacent to the end of Church Street on the east bank. The soffit level of the bridge has been increased to 76.0 m to match the top of the stop bank on the east end.
- An additional approach span of approximately 21m from the top of the stopbank and the flood plain on the east side. This is considered a more economic than providing ramps down to the flood plain level to connect with the existing network.
- A combination of earthworks and 30m of structural ramps between the flood plain and the clear span on the west bank of the river. The footprint of the approach ramp would be aligned parallel with the river to minimise obstructions in the flood plain.
- 280m of 3m wide hard surfaced at grade shared path across the flood plain to the west of the river, crossing the flood plain on the line of the existing Surrey Street and Richmond Street paper roads to link with Avon Street and connecting to the west end of the bridge.
- 260m of 3m wide hard surfaced at shared path along the top of the stopbank adjacent to Huron Street connecting to the east end of the bridge.
- One small additional culvert required to cross an existing flood channel.
- Modifications to the existing stopbank earthworks on the west side to provide a graded path from the top of the stopbank at Avon Street to the flood plain.
- Lighting incorporated into the handrails of the main span, approach span and ramps and on the approach paths.

20.2 Structural Form

The structural form of the bridge has not yet been determined and will need to be further developed during the later stages of the design. It is also anticipated that this will be subject to public consultation.

An overview of Option 15 is illustrated below and in shown in more detailed on drawings 80510426-01-001-C002 and C005 in Appendix F.

20.3 Cost estimate

The project cost of this option, including design, construction and construction management, has been estimated at $5.15m with a lower and upper range between $4.6m and $6.7m.

When calculating the BCR, these costs, together with routine and periodic maintenance costs, are included and assessed over a 40-year period. With discounted rates applied to these totals, the cost used in the BCR calculation to compare against the assessed benefits is $4.66m. The corresponding lower and upper range values used equate to $4.2m and $6.1m.

20.4 Benefit Cost Ratio

The benefit/cost ratio for this option with the above cost range has been calculated between 2.48 and 3.62 with a base BCR of 3.25 (rounded to two decimal places).

Numerous assumptions and estimates are used when forecasting future project costs and benefits. A sensitivity analysis tests a range of scenarios using upper and lower bounds of key variables. The analysis also adds rigour to the economic analysis and tests the validity of the results. A range of sensitivity tests has been undertaken for a number of assumptions for the recommended option only, with the results outlined in Table 20-1 below.

Table 20-1: Sensitivity testing of Option 15

Option 15	Sensitivity Low		Base BCR		Sensitivity High	
	Low BCR	Assessed Value	Base BCR*	Assessed Value	High BCR	Assessed Value
Capital Cost	3.62	$4.2m	3.25	$4.66m	2.48	$6.1m
Number of additional cyclists using new bridge (per day)	2.62	60	3.25	115	4.58	230
Number of additional pedestrians using new bridge (per day)	2.34	50	3.25	100	4.17	150
Construction Start	3.42	Year 1(2019)	3.20	Year 2 (2020)	3.45	Year 3 (2021)

*The above values have been determined on the basis on zero maintenance costs associated with the do-nothing option. This is a conservative assessment and any cost associated with maintaining the footpaths or road surface on the existing bridge would improve (increase) the BCR values shown above.

A similar assessment for Option 14- Rock Street determined a BCR range between 2.21 and 4.32 with a base value of 3.02.

21. Option Risks

The risk associated with the recommended option have been considered and assessed and are summarised below but should be monitored and revised as the project progresses.

Additional risks are likely to be identified as the project progresses, and these should be captured in a risk register during the next phase of work.

21.1 Technical

- Resource consent process – unexpected issues identified during process that may lead to appeals and delay timeframes – assessed as medium to high
- Geotechnical – detailed geotechnical investigation reveals unexpected ground condition – assessed as low
- Designs do not adequately consider flood effects – assessed as low
- Water supply pipeline requirements adversely impact on design – assessed as low.

21.2 Operational

- Technical solution for structural components results in greater maintenance requirements – assessed as low
- Reduced level of service achieved due to increased flood frequency – assessed as low
- Increased maintenance costs due to increased flood frequency – assessed as medium.

21.3 Financial

- Additional costs if land acquisition required – assessed as low
- Design and construction cost exceed estimates due to structural or geotechnical complexity – assessed as medium
- Tender values vary due to limited or exceptional interest from tenderers – assessed as high
- Construction occurring outside of optimum time may incur additional cost – assessed as medium
- Construction disrupted by flood event – assessed as low
- Currently $1.2m is included in the Council Long Term Plan, which is insufficient to cover the estimated costs – assessed as medium.

21.4 Stakeholder/public

- Negative feedback from the community and stakeholders – assess as low
- Community expectations differ from stakeholders consulted to date – assessed as low
- Unanticipated cultural or heritage issues discovered – assessed as low
- Local body elections in 2019 may affected political appetite for change – assessed as medium.

21.5 Environmental and Social

- Adverse environmental effects during construction – assessed as low

21.6 Safety

- Bridge installed without associated improvements on pedestrian/cyclist network resulting increased risk to users outside of project extent – assessed as low
- Attempts to continue to use crossing during flood conditions – assessed as low
- Safety issues identified during road safety audit – assessed as low.

21.7 Economic

- Incorrect assumption on existing and potential use result in an actual BCR below 1.0 – assessed as low.

22. Recommended Option: Outcomes Assessment

An assessment of the project using a results alignment and cost-benefit appraisal has been undertaken to ensure that the recommended option provides value for money and is a priority for investment.

22.1 Results Alignment

An assessment of the recommended option against the Transport Agency 's Investment Assessment Framework for walking and cycling projects the is given in Table 22-1. The purpose of this process is to assess the significance of the problem relative to the goals and outcomes of the GPS. The assessment demonstrates a High alignment.

Table 22-1: Results Alignment

GPS Priority	Description	Alignment
Safety – a safe transport system free of death and serious injury	Addresses a high perceived safety risk to use of the mode (noting data supporting this claim is an evidence gap)	May be high but no data
Access to opportunities, enables transport choice and access, and is resilient – thriving regions	Addresses a significant problem with the ability to use existing facilities including promotion, and use by people who identify as disabled and young people	High
	Supports increasing uptake of children using cycling and walking especially to and from school	High
Access to opportunities, enables transport choice and access, and is resilient – liveable cities	Addresses a significant problem with the ability to use existing facilities including use by people who identify as disabled	High
	Supports increasing uptake of children using walking and cycling especially to and from school	High
Environment – reduces adverse effects on the climate, local environment and public health	Enables a modal shift from private motor vehicles to active modes	Medium

22.2 Assessments Against Investment Objectives

An assessment against the investment objectives for the recommended option is given in Table 22-2.

Table 22-2: Assessment Against Investment Objectives

Investment Objective	Assessment	Alignment Against IOs
1 Increased numbers of people who cycle and walk for travel in Gore.	The proposed new independent bridge will provide an alternative to the existing SH1 bridge crossing of the Mataura River. The new structure would be located on a desire line between the East Gore and the remainder of the Gore township and will link to a network of off-road and quiet road pedestrian/cyclist pathways currently under construction. The new bridge will be a safer alternative to the existing SH bridge crossing and subsequently attract additional users who may be put off using the existing structure. The location of the bridge is also expected to attract recreational users as it will provide a shared path that utilises the proposed pedestrian/cyclists network either side of the river and the SH bridge to the south.	Increase of: • 230 new cycle trips per day • 200 new pedestrian trips per day • **Total**: 430 new trips by active modes
2 Minimise risk to public safety – improve safety	Feedback from a public survey has shown that a large number of users have safety concerns when using the existing SH bridge. This is due to the narrow, uneven footpaths and conflicts experienced	Overall Level of Service improvement from existing Level D to Level B

Investment Objective		Assessment	Alignment Against IOs
	for active modes.	between pedestrian and cyclists. The footpath is currently used by cyclists as it is considered a safer alternative to the highway. Cyclists using the bridge footpaths also reported concern at the narrow width. The new independent structure will provide a traffic free 3m wide crossing of the Mataura River, improving safety for all active mode users.	
3	Improved access between East and West Gore.	At present only one crossing of the Mataura River exists. The existing crossing also carries the SH1 and a large proportion of heavy vehicles. The new independent structure will provide a more attractive alternative for pedestrian and cyclists improving access options between East and Gore.	Improvement to the relative attractiveness of the route from 1.0 to 1.3 (when considered with pedestrian/cyclist network against EEM Table SP11.1)

22.3 Cost-benefit Appraisal

An assessment of the whole of life benefits and costs based on the Economic Evaluation Manual is expected to be between 2.34 and 4.58, with an indicative value of 3.25 for Option 15.

23. Financial Case

This section includes a summary of the financial impacts and effects of the proposed project. Funding options and potential revenues are also considered

23.1 Indicative Project Delivery Costs

Project delivery costs at this stage are based the scheme level design which has been informed by an initial geotechnical investigation, topographical survey and hydrological considerations. A summary of the expected costs for project delivery are provided in Table 23-1.

Table 23-1: Indicative project delivery costs

	Expected estimate	Lower and upper confidence values
Design, project documentation and construction management costs, including consultancy fees and Client managed costs	$510,000	$459,000 - $663,000
Construction costs	$4.64m	$4.17m - $6m
TOTAL	$5.15m	$4.6m - $6.7m

No property purchase or disposal costs are required to deliver the project. A funding application should be based on the combined base estimate costs above that total $5.15m. This estimate has a lower and upper confidence level of between $4.6m and 6.7m.

The project could be progressed to pre-implementation within a short timeframe following the approval of the Transport Agency funding.

23.2 On-Going Maintenance and Operations

The proposed works will result in a new to the asset and therefore a corresponding change to the ongoing maintenance and operation.

The addition of a new structure and associated connecting pathways, including lighting, will result in ongoing maintenance costs. Depending on the final structural form selected periodic maintenance may be required in the form of painting or replacement of structural elements i.e. tensioning cables. Additional routine annual maintenance of $2,000 and periodic maintenance cost of $20,000, every 10 years, has been included within the 40-year cost assessment. These costs should be included in ongoing maintenance budgets.

Despite the above, the additional maintenance cost is offset by the benefits of the new asset, with the overall change in Net Present Value being small.

23.3 Project Timing

Construction to commence in 2020 with duration of 12 months. Prior to this detailed design and procurement of these services will need to be completed.

23.4 Collaboration and Funding Options

Gore District Council Long Term Plan 2018-28 includes $1.2m towards the cost of this project. The project has been included in the Regional Land Transport Plan (2018). Co-investment for the project will be sought from the Transport Agency.

23.5 Financial Risk

The allocated $1.2m in the Council Long Term Plan does not cover the estimated project cost of $5.15m. The Council are waiting for a response from the Transport Agency regarding eligibility for co-investment at higher than the normal Financial Assistance Rate of 55%. This Targeted FAR would be 77% for the Council. The outcome of this will determine the amount of additional funding required. If not received, the Council will explore appropriate funding avenues to complete the funding package, and the project will be deferred.

The Transport Agency's funding gateway also requires approval of this business case.

Part C: Commercial and Management Case

The implementation of the project is directly linked to the funds available.

24. Implementation Strategy

The next stage of the project is pre-implementation and detailed design. The following considerations will shape and inform the final strategy:

- **Technical Risks -** Issues that require further consideration during the geotechnical investigations, concepts for and decisions about the structural form for the main span, detailed design, consultation and resource consent applications.
- **Procurement Approach -**The final form of the structural solution may influence the procurement approach adopted to deliver the detailed design.

No land acquisition is expected to be required as part of this project.

24.1 Technical Approach - Preliminary Design/Pre-Implementation

The technical approach to the next phase of work is proposed to be staged, as follows:

- Preparation of preliminary geotechnical investigation report (PGAR) and on-site geotechnical investigations (already procured)
- Develop concept design options for the structural form of main span including concept sketches (already procured)
- Determine requirements for proposed water supply pipeline, i.e. dimensions, pressure and determine potential loading
- Produce a design philosophy statement and recommended option (already procured).
- Develop preliminary design options for the main span and ramps.
- Undertake assessment of environmental effects of recommended option.
- Identify mitigation, including modifications to design, to appropriately manage identified effects (mitigation workshop).
- Confirm procurement approach for detailed design.
- Assess risks associated with any unmitigated effects.
- Confirm/finalise the project design and economics.
- Procure project implementation (construction) phase.

The proposed approach enables whole of project mitigation discussions to occur, which enables development of complementary and efficient mitigation methods to be adopted. Equally, this allows design and construction flexibility issues to be considered. Thus, transparent communications across the Project team should be maintained when making decisions about design and mitigation. The risk register will focus on managing both consenting and construction risks.

24.2 Stakeholder Engagement

Following review of this Single Stage Business Case and development of concept design options for the main span, the next stage is for the Council to engage with the local community to determine the structural form for the recommended option. Consultation will help inform:

- Aesthetics of bridge form and visual impacts within the landscape.
- Any other concerns.
- Consultation on environmental mitigation prior to, or as part of resource consent application.

24.3 Risk Allocation and Transfer

The key risk types that could delay the project are:

- **Technical risks** where effects either lead to significant design change or cause significant cost escalation (by introducing or increasing the scope of mitigation).
- **Programme risks** caused by for example, discussions with affected parties and stakeholders, staff resourcing, or hearings and appeal processes.
- **Reputation risks** caused by strong local opposition to project.

Table 24-1outlines how these risks will be managed.

Table 24-1: Commercial Risk Management

Risk	Management Approach
Technical Risks	Robust technical reviews and robust submissions for statutory approvals
Programme Risks	Careful programme management against realistic deliverables
Reputational Risk	Ensure pro-active and regular stakeholder and public communications

24.4 Project Governance

The Project Team for the next phase is provided within Table 24-2. This will be agreed with the Council and the Transport Agency.

Table 24-2: Project Team

Role	Name
Project Sponsor – Gore District Council	Ramesh Sharma
Client Project Lead – Gore District Council	Hashem Ramezan-zadeh
Investor Client – NZ Transport Agency	Chad Barker
Consultant Design/Project Manager	TBC (dependant on Procurement and Implementation, refer 24.7)

Whilst there is a substantial level of investment sought from the Transport Agency, it is recommended the Council remain as the lead agency as they have led the project since the Point of Entry stage and have strong relationships with residents and local boards. The Council will however need to seek external capability to oversee the delivery of detailed design.

24.5 Project Management and Delivery

With the Council remaining as the lead agency the project will be managed by Council compliant and best practice principles.

24.6 Communications and Engagement

Engagement has been completed with key stakeholders who attended the ILM and shortlisted options workshop. Initial conversations have been conducted with iwi. Further consultation will be completed in the next stage to help inform the selection of the structural form for the main span.

24.7 Procurement of Implementation Stage

Concept designs and consultation may be completed under already procured professional services unless Council opt for an alternative delivery model.

Selecting a delivery model for the detailed design and construction (pre-implementation and implementation phases) requires careful consideration of the activities involved and the capability and capacity of resources to deliver them.

A brief description and comparison between some of the benefits and disbenefits of these models is outlined in Table 24-3.

Table 24-3: Delivery Model Options

Delivery Model	Description	Benefits	Disbenefits
Staged	Delivery through two separate contracts i. Detailed Design and construction monitoring ii. Construction phase	A high degree of purchaser control is possible. Greater and earlier certainty over final	Separation of designer and builder may not encourage innovation Ongoing and significant involvement of the

Delivery Model	Description	Benefits	Disbenefits
	Supplier selected using price / quality assessments Lump sum or schedule of prices Roles well defined and understood. The purchaser is more able to control the scope. Risk largely managed by the purchaser	outputs and costs possible Contract management is simplified as decisions are solely made by the purchaser Transaction costs for both supplier and the purchaser are reduced	purchaser in project management Less coordination between the design and construction phases Design errors may be costly to fix
Design Build	Delivery through a single supplier to complete all detailed design and construction Includes options to i. Design and construct ii. Design, novate and construct Lump sum with one price to the supplier for the delivery of outputs Risk transferred to the supplier. Purchaser less involved in design and construction.	Quicker start times and potentially completion times can be achieved and earlier construction Purchaser can focus on outcomes via a concept design Outputs can be clearly defined, technical and financial Purchaser needs less design resource Overlapping design and construction increases the potential for innovation	Proposal preparation costs for potential suppliers can be high which may be reflected in price Risks may increase around design quality, outcomes and cost Standards must be clearly defined Greater supplier exposure to risk that may increase the price Post contract award variation may increase costs May reduce flexibility The number of potential suppliers may be reduced because of the requirement to accept greater risk Additional resources may be required for contract management
Early Contractor Involvement	A variation on design build with contract awarded following concept design Usually based on a guaranteed maximum price to deliver a defined outcome Risk transferred to the supplier. Purchaser less involved in design and construction	Offers advantages for complex projects where the scope is not fully understood or developed Often used for ‘fast track’ projects to decrease delivery time Involvement of construction expertise in the planning and designing stage includes constructability issues	Proposals cost higher than design build Outcomes need to be well defined Strong probability that variations will be required Requires robust contract documentation Complex to administer and may require a principal’s advisor to assist the client to

Delivery Model	Description	Benefits	Disbenefits
			ensure best value design is selected

Given the size, complexity and risk profile of the next phases, it is recommended that either a staged delivery model or a design and build are considered following the development of concept designs.

The following programme has been proposed by Council to facilitate this

- NZTA funding application review and approval, March-May 2019
- Develop specimen design and prepare tender documents for a construction contract
- Planning and engagement, March-July 2019
- The Council approval/ TIO update, June 2019
- Tender for detailed design and construction, July-September 2019
- Detailed design and construction September 2019 - September 2020
- Implement the remainder of the cycling network programme based on the available maintenance budget.

More detail is provided in Appendix J.

24.8 Assurance and Acceptance

The Project design should be subject to the normal project review processes with no specific unusual engineering or operational considerations prevailing. Formal construction funding acceptance (sign-off) will require the Transport Agency Board approval.

24.9 Cost Management

The project design includes mitigation and design risk factors that are already allowed for in the project cost. The confirmation of the recommended option for the structural form of the bridge, geotechnical investigations and resource consent conditions with help provide greater certainty around costs.

The risk register will be maintained and if required, the cost estimate revised.

24.10 Issue Management

Issues will be managed through a documented issues log. A close working relationship with the client will be beneficial during the remaining phases. This should consist of frequent contact to minimise the risk of issues arising or escalating.

24.11 Assumptions and Uncertainties

A number of assumptions have been used in the development of this business case, including:

- Existing and future active mode usage (included within the economic evaluation). These have been subject to sensitivity tests as part of this assessment.
- The cost of the main bridge span over the Mataura River. This will be dependent upon the final structural form selected and the ability and availability of the resources to construct a potentially complex structure.
- Ground conditions have currently been assessed from a desk-based study and visual site inspection. Geotechnical investigations are required to confirm the ground conditions at the proposed crossing location.
- That the proposed pedestrian/cyclist network will be developed, and future improvements completed that link with the proposed shared path and subsequently deliver the full benefits of the project.
- That funding for the proposed pedestrian/cyclist network is not reliant on or included within this business case.



Appendices

Appendix A Gore Cycle Strategy Implementation Programme

A.1 East Gore Track: School Route, Commuter, Recreation

Section	Length (m)	Surfacing	Status	Delivered by	Time Frame	Facility
River Terrace	600	Sealed	Existing roadway	GDC- road marking	2020	Cycle lane
Walnut Crescent	650	Formed metal track	Already formed	Volunteers	Done	Track
Woolwich St.	200	Formed metal track	Under development	Volunteers	Done	Track
Maitland St.	300	Formed metal track	Under development	Volunteers	Done	Track
Hamilton St.	1,000	Sealed	Existing roadway	GDC-capital	2020	Shared path
SH1 Crossing	15	Sealed	Being proposed	NZTA	2020	Shared crossing
Railway esplanade	200	Concrete shared path	Being proposed	NZTA/GDC	2020	Shared path
Hamilton Park	1,740	Formed metal track	Already formed	Volunteers	Done	Track
Toronto St.	300	Sealed	Existing roadway	GDC	2020	Cycle lane
Ontario St.	200	Sealed	Existing roadway	GDC	2020	Cycle lane
Kiwi rail connection	160	Formed metal track	Under development	Volunteers	2019	Shared path

A.2 West Gore Track: School Route, Commuter, Recreation

Section	Length (m)	Surfacing	Status	Delivered by	Time Frame	Facility
Mataura bridge	80	Sealed	Being proposed	GDC - Capital	2019	Cycle lane
Flood plain	300	Formed metal track	Being proposed	GDC - Capital	2019	Track
Flood bank	1,200	Formed metal track	Being proposed	GDC - Capital	2019	Track
Hyde St.	440	Sealed	Existing roadway	GDC-capital	2020	Shared path
SH1 crossing	20	Sealed	Existing roadway	NZTA	2020	Shared crossing
Crombie St.	300	Sealed	Existing roadway	GDC- road marking	2021	Cycle lane
Broughton St.	4,000	Sealed	Existing roadway	GDC- road marking	2021	Cycle lane
Cemetery	400	Formed metal track	Already formed	GDC - Parks	Done	Track
Aotea St.	400	Sealed	Existing roadway	GDC- road marking	2021	Cycle lane
Norton St.	250	Sealed	Existing roadway	GDC- road marking	2021	Cycle lane

Section	Length (m)	Surfacing	Status	Delivered by	Time Frame	Facility
Waimea Ave.	500	Sealed	Existing roadway	GDC- road marking	2021	Cycle lane
SH 93	400	Formed metal track	Already formed	GDC- Parks	Done	Track
SH93	300	Concrete shared path	Being proposed	NZTA/GDC	2021	Shared path
SH93 crossing	15	Sealed	Being proposed	NZTA	2021	Shared crossing
Denton St.	200	Sealed	Existing roadway	GDC- road marking	2021	Cycle lane
Flood bank	60	Concrete Shared Path	Being proposed	GDC	2020	Shared path

A.3 Reaby Road: Connection Between Gore and the Hokonui Track

Section	Length (m)	Surfacing	Status	Delivered by	Time Frame	Facility
Crew St.	250	Sealed	Existing roadway	GDC- road marking	2020	Cycle lane
Reaby Rd.	3,600	Formed metal track	Roadside Shoulder	GDC/ Volunteers	2020	Track

A.4 Mataura Track: Connection Between Gore and Mataura

Section	Length (m)	Surfacing	Status	Delivered by	Time Frame	Facility
SH 1	13,000	Formed metal track	Road reserve	Volunteers	2026	Track

A.5 Manderville Track: Connection Between Gore and Manderville

Section	Length (m)	Surfacing	Status	Delivered by	Time Frame	Facility
SH 93	17,000	Formed metal track	Rail Trail	Volunteers	2042	Track

Appendix B Council Public Survey Response Summary

Gore Traffic Bridge Safety Survey – comments received regarding safety of existing bridge for active modes.

Negative Comments Received
Cyclists must use the pedestrian area of the bridge and give way to pedestrians.
If cyclists don't feel safe riding across traffic bridge then they need to get off and walk across walking lanes.
It's not set up for cyclists and walkers to use together. Also, there are no pedestrian crossings once you get off the bridge so unsafe for either cyclists or walkers to get to town.
It's a tiny bit tight on the pathway when you are riding a bike. Means you have to stop for walkers which is not such a bad thing either.
Would help to give walkers and cyclists more space to pass by, when coming off south end on south side need to be careful.
Because road cyclists are on the road, this can make it difficult for cars to go around. An alternate bridge is a good idea, but if accessible by a gravel path, it makes it hard for road cyclists as those bikes don't really do gravel.
If you are cycling there is not a lot of room to get past people walking. It is too narrow and dangerous to cycle on the actual bridge with traffic. A wider walk/cycle way across the bridge and cycle lane on the right-hand side of the road all the way to Hamilton park would be fantastic.
Cycles (for safety reasons) should not be permitted to use traffic section of the bridge. Pedestrian areas would be a better option. But crossing the road at either end of the bridge is also a dangerous option for both cyclists and pedestrians.
If it was legal to ride across the bridge on the footpath it would be OK, but to ride on the road it feels dangerous.
As a cyclist you're not sure whether you are meant to use the road or the footpath. And trying to cross the road to get onto the footpath doesn't always feel easy or safe – when you are wanting to get to the opposite side. Also, when walking across the bridge it is very noisy with the large volume and size of vehicles travelling across. It's a lovely view but not an enjoyable experience. You also feel 'exposed' walking across the bridge. It would be nice to wander across and take in the view/look for fish etc. Sound barriers could be an option? I think that would help encourage use and be more user friendly on windy days.
It would be great to have one side walking and one side for biking – can be tricky to bike past people at times and definitely would not cycle across the bridge in the vehicle lanes.
I think the walking passage for bikers and people walking needs to be wider, so people can get past each other.
It is quite difficult to cross at the East Gore end when the traffic is busy. Also, hard to see cars coming over the rise on the bridge from the town end.
There is very little room for cyclists using the road. To feel safe, I usually use the walkway.
It is good, but the narrowness of the path feels restricting when using bicycle if you come across other pedestrians on the path.
The surface is uneven – with a lot of trip hazards. I regularly run across the bridge and am always aware of the surface and run accordingly. The barriers always feel very low – both river side and traffic side – and therefore don't feel very safe when crossing.
I feel safer riding across the bridge so that pedestrians have enough space, however some cars don't share the same thought for cyclists.
Too little space for walking and cycling and the street noise makes crossing the bridge very uncomfortable.
A bit narrow if a cyclist needs to pass a pedestrian.
There is no entry or exit. The bridge just finishes and goes onto the road. No pathway.
Have to give way for cyclists.
Not a lot of room to walk with a pram when someone comes with a bike the other way.
Trucks and cyclists do not go together.

Negative Comments Received
Not wide enough.
It is very loud and windy when big trucks are crossing within metres of you which is a little off putting.
It is difficult to cycle and walk so if a pedestrian is on the bridge, cyclists need to dismount and walk past. It is tight. However, cycling across the bridge with the traffic requires a skill my children do not have. To do this you need to be pretty savvy with your road rules.
There is not enough room for a cyclist to bike or walk his/her bike by someone walking or cycling.
Exit from right hand side pedestrian/cycle area going north is concealed by tree so cannot see cyclists coming Exit from this pedestrian/cycle area on the Gore town side is also difficult as it's a few metres from here vehicles exit from the roundabout so access on and off the pedestrian/cycle areas could be improved – consider making one side of the bridge for pedestrians and the other side for cyclists as it's narrow to pass anyone on a cycle. Don't think a whole new pedestrian/cycle bridge is required – could solve issues with improvements to exit/entry and by separating cycles and walkers to one side of bridge each.
Cyclists use the footpath on the bridge even though people are walking on it. Therefore, putting themselves in danger of falling over the railing (obviously depending on the bicycle height).
The entry/exit on the Gore side is such a busy intersection. On the East Gore side, you end up on the side street and have to cross over at Huron Street, which is a terrible street to cross.
There is constantly a dangerous amount of broken glass spreading right across the bridge for pedestrians. Also, the tiled concrete is very uneven and a very serious trip hazard. I personally can't even walk my dog across the bridge. I pick my 36kg Alsatian dog up and carry her right across the bridge because of the glass.
It's not wide enough for 2 cyclists to go through at the same time (cross paths).

Positive Comments Received
Great bridge.
The bridge is very safe for pedestrians and cyclists.
I walk and cycle regularly and feel it is a totally safe link from one side of town to the other.
I have used this bridge daily for the last 25 years and never experience a problem. People are always very courteous. I don't believe there is a need for change.
We've never had any problem sharing the bridge walkway with cyclists.
They work well together as the bridge is now. If you are frightened of being hit whilst cycling, drive!

Other Comments Received
We are a young family of 5 use the crossing 5-10 times per year (mainly on bike), the only issue I ever notice is trying to cross the main road at either end of the bridge, however a small amount of wisdom would tell me to use the zebra crossing further towards Main Street.
More maintenance by Council will help the condition of this walkway. People should also be responsible for their own care and vision.
Would be ideal to provide separated cycle access from vehicles and pedestrians. Improved entries and paved access under the bridge at both sides would also be an advantage.
A bit of separation would be good.
I think it would be a great idea to have two options for pedestrians/cyclists crossing the river. Leave existing one as is and put a new pedestrian only up river. This would make an excellent circuit for people looking to do some exercise at lunchtime from work. Plus, would open access to East Gore up a bit too. Win win.
It would be awesome to have another pedestrian bridge in place for East Gore people, cycling track and another access to the river for swimming.
It would be great to have a circuit to bike and walk around.
Cyclists need to go on the left side and people can go on the right one.
I have lived in the Gore district for 60 years and lived in East Gore for 25 years and never have I seen an accident or a near miss on the Gore Bridge by cyclists or walkers.

Other Comments Received
I don't see why this is an issue. People need to be aware. I was a Postie and never had an issue. You just have to be aware.
You could make the cyclist crossing bigger.
Make the cycle bit bigger.
Could existing bridge be widened on the walkway areas and better safety measures put in place to make people feel safer e.g. higher barriers for river side and better protection from traffic?
Yes, if you up the rates due to building a new bridge – I'll be bloody pissed off!
Pedestrians on north side, cyclists on south side
It seems a total waste of money to think about building a new bridge just for walking and biking. If anything, maybe look at the price of widening the walkway.
I see no reason why the Gore District Council would feel that this bridge is not fit for walkers and cyclists. The cost of building an additional bridge purely for this purpose is in my opinion wasteful. When I am travelling into Gore, I seldom see more than 2 people on the bridge and therefore I believe that it is not under pressure from overuse.
The existing bridge crossing has served us well for many years with no major incidents that I can remember. Stop spending time and money on such stupid and 'airy fairy' ideas. Fix the problems we already have in other areas.

Appendix C Cycle Network Development

(NB: Content below provided by the Council/NZTA 2019)

The township of Gore can be broadly grouped into five areas. These areas and their predominant land use is indicated in Figure 24-1 below.

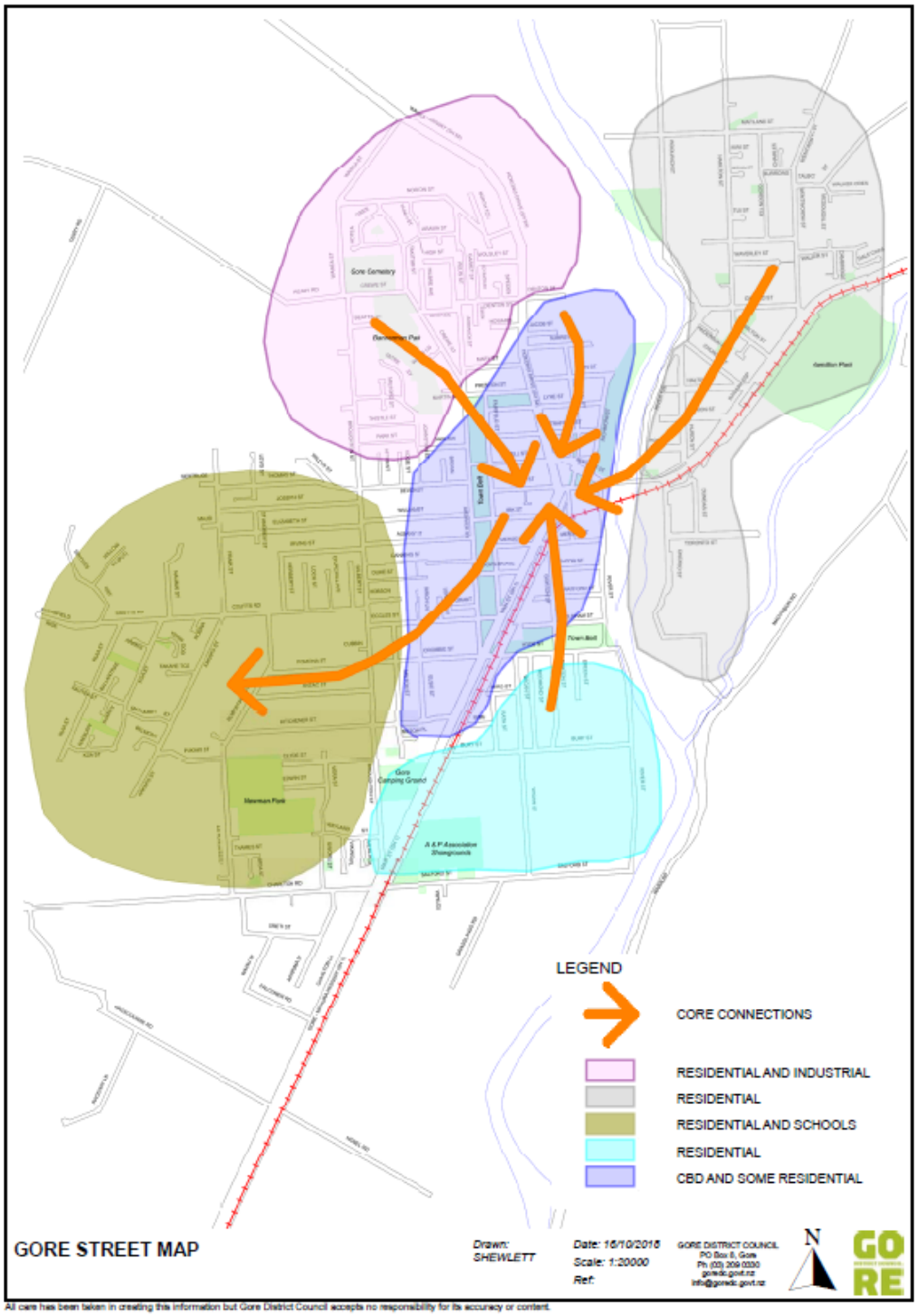


Figure 24-1: Predominant land use in Gore (map provided by the Council)

Census data made available through MapHub (NZTA, 2019) shows a demand for travel between all areas of Gore. Based on this data, Figure 24-2 illustrates the key links an integrated cycle network in Gore would need to make, superimposed on existing cycle facilities.

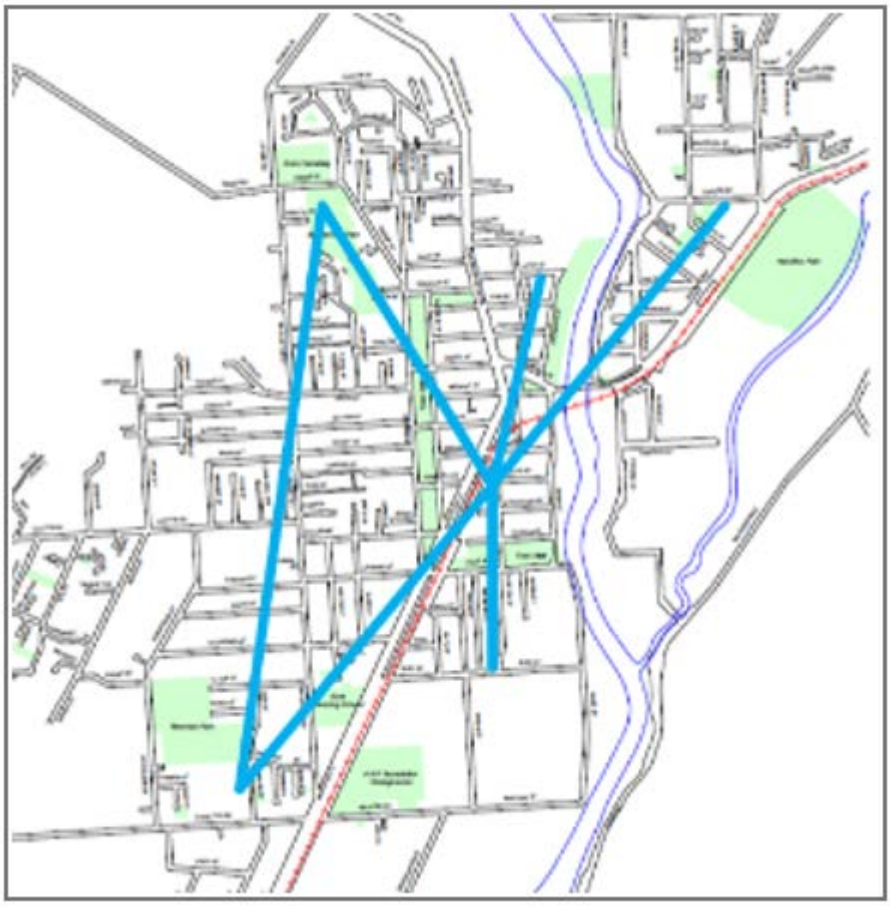


Figure 24-2: Core connections required to support an integrated cycle network in Gore (image provided by the Council)

Based on the census data, there is a particularly strong local travel demand between residential areas in the east and west, the CBD, and the schools/multi-sport facility in the west. An east to west cycle facility connecting these key origins and destinations would form the basis of the future cycling network.

Certainty on the east to west cycle connection will facilitate the advanced planning for the location of the remaining core cycle connections. The delivery of these connections can then be delivered as budgets allow, and as part of a more coordinated response to other work occurring on the road network. For example, opportunities may arise to improve the cycling environment during planned road maintenance activities (such as: road remarking, resurfacing, road rehabilitation, kerb and channel replacement, and/or footpath renewal) at minimal or no additional cost. Additionally, increased certainty pertaining to the core cycle network would enable a more coordinated relationship between Council and volunteer cycle track builders, who to date have built cycle links within the Gore township.

Appendix D MCA Assessment Matrix

				Investment objectives				Multi-criteria											
ID		Name	Details	Increase numbers of people who cycle and walk	Minimise risk to public safety - improve safety for active modes	Improve access between East and West Gore		Technical	Consentability	Operational / Maintenance	Financial	Customers / Stakeholders	Natural Environment	Urban Design	Wider effects	Strategic Fit	Economic	Weighted Investment Objectives	Other criteria total
1	Base	Do Nothing	No change to existing road layout or facilities. Maintenance, and other works already scheduled.	-1	0	-1	Fatal Flaw												
2		Do Minimum	Widening of footpaths/connections on either side of the river as projects and funds become available; improving crossings (either end of the bridge, underneath) Low cost, low risk projects. Pedestrians facilities.	0	1	0		2	2	0	0	-2	0	0	0	0	0	40	20
3	Online	Online A:	Reallocate existing bridge width, and approaches - Assuming bidirectional path on one side only	1	1	1		-2	3	0	-1	0	0	1	0	1	0	100	20
4		Online B:	Reduce speed limit on existing bridge	0	1	0	Fatal Flaw	1	3	3	3	-2	3	0	0	1	0		
5		Online C:	Clip on facilities (one or both sides), and approaches without any other works	1	1	1		-2	-1	-1	-1	1	1	2	0	1	0	100	0
6		OnC (i) 5+19	Clip on facilities (one or both sides), and approaches	2	2	1		-2	-1	-1	-1	1	1	2	0	1	0	180	0
7		Online D:	Widen the existing (add more width) SH bridge to better accommodate active modes	1	1	1		-2	-1	-1	-2	1	-1	2	0	1	0	100	-30
8		Online E:	Install traffic signals at either end of the bridge and turn the bridge into a oneway arrangement	0	1	-1	Fatal Flaw												
9	Offline	Offline A:	Use existing rail bridge (clip on facilities)					Fatal Flaw											
10		Offline B:	Ferry service							Fatal Flaw									
11		Offline C:	New State Highway Bridge multi-purpose bridge (all modes)								Fatal Flaw								
12		Offline D:	New local road bridge (now)								Fatal Flaw								
13		Offline E:	New local road bridge (future) - designating new local road and in interim constructing new active mode bridge.								Fatal Flaw								
14		OfF (i) 12+19	New structure at C immediate upstream	2	2	2		-2	-2	-1	-2	2	-3	3	2	2	2	200	10
15		OfG (i) 13+19	New structure at B 1km upstream	2	2	2		-2	-2	-1	-2	3	-3	3	3	3	2	200	40
16		Offline H:	New pedestrian / cycle structure (upstream lining up with approximately Maitland Street) (location A)	1	1	1		-2	-2	-1	-1	1	-3	2	2	2	1	100	-10
17		Offline I:	New pedestrian / cycle structure (downstream)	1	1	1		-2	-2	-1	-1	1	-2	2	1	2	1	100	-10
18	Combination	Combination 1:	Provide more space for active modes on existing bridge (reallocate bridge width) and install new bridge (assume location B)	2	2	3		-3	-2	-1	-3	1	-3	2	2	2	1	220	-40
19		Combination 2:	Lower speed limit on existing bridge and new bridge (assume location B)	2	2	2		-2	-3	-1	-3	0	-3	2	2	2	1	200	-50
20		Combination 3:	Install two new crossings	2	3	3		-3	-2	-1	-3	3	-3	2	3	3	1	260	0
			Weighting																
		3			3														
		2			2														
		1			1														
		0	0		0	0													
		-1			-1														
		-2			-2														
		-3			-3														
		Fatal Flaw																	

Summary from the above MCA assessment

- Options 1, 4 and 8 were ‘fatally flawed’ as they did not meet one or more of the investment objectives.
- Option 9 was ‘fatally flawed’ against the technical criteria due to KiwiRail clearance requirements
- Option 10 was ‘fatally flawed’ against the operational and maintenance criteria due to difficulties with both high and low water levels impacting on the desired levels of service
- Option 11, 12 and 13 were ‘fatally flawed’ against financial criteria as estimated costs were anticipated to be in excess of $10m and unaffordable
- Options 6, 14, 15, 18, 19 and 20 score highly against the Weighted Investment Objectives.
- With the highest positive scores against the assessment criteria, Options 6, 14 and 15 were shortlisted.

Appendix E Stakeholders Feedback on Shortlisted Options

Option 15 - New Upstream pedestrian cycle bridge upstream of existing

Advantages	Disadvantages
Alternative across over river	Further away from CBD
Environmentally friendly	Consenting
Structure for fishing	Not as close to arts or heritage precinct
Close to popular swimming spot	Geotech issues
More cycling friendly	Length of bridge
Enhanced recreational opportunity and socialisation for people	Flood plain
Better aesthetic opportunities	Level of service (flooding)
Width of river – narrower	Land under private ownership?
Visibility from existing bridge	
Could be incentive for purchasing section in Matai Ridge subdivision	
Centre of populations	
Centre of cycle trails to come	
Shortest span (cost effective)	
Amenity value	
Potential other infrastructure	
Link onto existing trails	
Greater recreational connections	
Additional residential catchment	

Option 14 - New Upstream pedestrian cycle bridge close to existing

Advantages	Disadvantages
Could facilitate further development	Width of river
Close proximity to CBD	Consenting?
Better visibility for users	Construction timeframe
Central to East Gore population	Not centre population
Close proximity to Arts and Heritage Precinct	Not centre of cycle trails
More pedestrian friendly	Flooding in eastern corners
Aesthetics – visible for tourism	Better Level of service (possibly)
Connection between Arts and Heritage Centre	Longer span and greater cost
More pedestrian friendly	
Enhanced recreational opportunity and socialisation for people	
Shorter distance between banks	
Tourism visitor attraction	
Connection to kids bike park	
Purpose built separation	
Longer projected life	
User friendly	
More attractive route	
Possible linkage with new council development	

Option 6 - Clip on Facilities one or both sides

Advantages	Disadvantages
Existing structure	Congestion effect of cycling, pedestrians and traffic
Timeframe faster	Poor recreational experience
Consenting case	Further reliance on single structure to cross the river
CBD proximity	Model mix
Potentially cheapest option	Resilience issue?
Desire line	How do you get on/off bridge?
	Aesthetics.
	Existing congestion
	Ownership
	Longest option
	Structural integrity
	Shorter life
	Noise and comfort level
	Construction disruption
	Safety not significantly improved

Preferences Expressed by Three Groups at Workshop Conclusion

	Option 6	Option 14	Option 15
Group 1	3	2	1
Group 2	3	1	2
Group 3	3	1	2

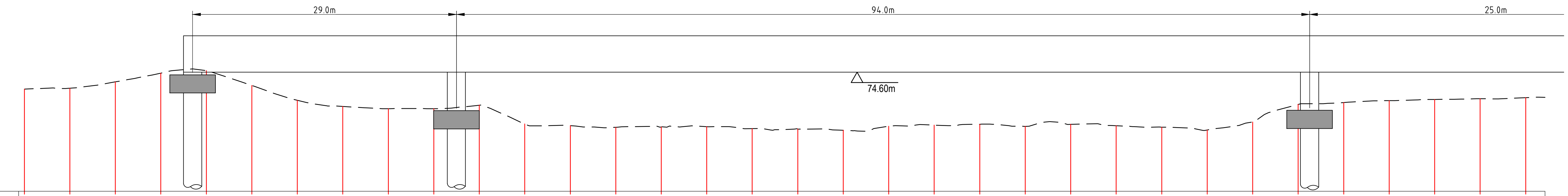
3=highest ranked, 1=lowest ranked

Appendix F Short List Options

Options 14 – Rock Street is illustrated on Drawings 80510426-01-001-C001 and C004

Option 15 – Surrey Street is illustrated on Drawing 80510426-01-001-C002 and C005

DO NOT SCALE - IF IN DOUBT, ASK



DATUM RL 61.50

RIVER SECTION (chainage 50.000 to 140.000)

DESIGN LEVEL											
EXISTING LEVEL	72.738	72.824	73.526	74.494	74.761	73.130	71.502	70.826	70.583	70.569	70.968
CUT/FILL	0.000	0.000	-0.000	-0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000
CHAINAGE	0.000	5.000	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000

DESIGN LEVEL												
EXISTING LEVEL	68.899	68.715	68.529	68.567	68.604	68.383	68.348	68.197	68.652	68.773	68.869	68.639
CUT/FILL	-0.000	0.000	-0.000	-0.008	-0.002	0.003	-0.006	-0.004	-0.004	0.002	0.002	-0.001
CHAINAGE	55.000	60.000	65.000	70.000	75.000	80.000	85.000	90.000	95.000	100.000	105.000	110.000

DESIGN LEVEL											
EXISTING LEVEL	68.857	68.702	68.551	68.226	69.111	71.052	71.259	71.466	71.599	71.669	71.799
CUT/FILL	-0.003	0.001	-0.001	0.005	-0.006	-0.001	0.001	-0.000	-0.001	-0.000	0.000
CHAINAGE	115.000	120.000	125.000	130.000	135.000	140.000	145.000	150.000	155.000	160.000	165.000

ALIGNMENT DOWNSTREAM - LONGITUDINAL SECTION

SCALES - HZ 1:250
VT 1:250

5 0 5 10m
SCALE 1:250

ORIGINAL SIZE A1

NOT FOR CONSTRUCTION

REV	REVISIONS	DRN	CHK	APP	DATE

SURVEYED
DESIGNED
DRAWN
DRAWING CHECK
DESIGN CHECK
DESIGN REVIEW
APPROVED
PROF REGISTRATION:

Stantec

Client:

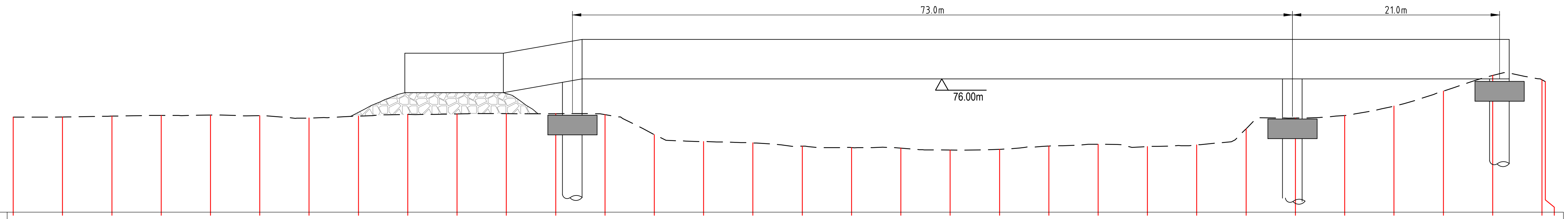
LONGFORD RIVER TRACK

ROCK STREET CROSSING
LONGSECTION

Status Stamp: **PRELIMINARY**
Date Stamp: **14/12/2018**
Coordinate System:
Scales: AS SHOWN
Datum:
Drawing No. 80510426 - 01 - 001 - C 001
Rev. A

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DATUM RL 62.50

DESIGN LEVEL											
EXISTING LEVEL	72.125	72.138	72.222	72.290	72.329	72.271	72.033	72.229	72.390	72.441	72.477
CUT/FILL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CHAINAGE	250.000	255.000	260.000	265.000	270.000	275.000	280.000	285.000	290.000	295.000	300.000

DESIGN LEVEL											
EXISTING LEVEL	72.474	72.379	70.342	69.651	69.514	69.183	69.035	68.987	68.783	68.855	69.200
CUT/FILL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CHAINAGE	305.000	310.000	315.000	320.000	325.000	330.000	335.000	340.000	345.000	350.000	355.000

DESIGN LEVEL											
EXISTING LEVEL	69.372	69.145	69.307	70.939	72.029	72.295	73.241	74.765	76.350	75.898	75.722
CUT/FILL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CHAINAGE	360.000	365.000	370.000	375.000	380.000	385.000	390.000	395.000	400.000	405.000	405.338

ALIGNMENT UPSTREAM - LONGITUDINAL SECTION

SCALES - HZ 1:250
VT 1:250

5 0 5 10m
SCALE 1:250

ORIGINAL SIZE A1

NOT FOR CONSTRUCTION

REV	REVISIONS	DRN	CHK	APP	DATE

SURVEYED
DESIGNED
DRAWN
DRAWING CHECK
DESIGN CHECK
DESIGN REVIEW
APPROVED
PROF REGISTRATION:

Stantec

Client:

LONGFORD RIVER TRACK

SURREY STREET CROSSING
LONGSECTION

Status Stamp: **PRELIMINARY**
Date Stamp: **14/12/2018**
Coordinate System:
Scales: AS SHOWN
Datum:
Drawing No. 80510426 - 01 - 001 - C 002
Rev. A

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ORIGINAL SIZE A1



10 0 10 20m
SCALE 1:500

PLAN
SCALE 1 : 500

NOT FOR CONSTRUCTION

REV	REVISIONS	DRN	CHK	APP	DATE

SURVEYED	L PATERSON	12/18
DESIGNED	M FLATTERS	01/19
DRAWN	B GREY	01/19
DRAWING CHECK		
DESIGN CHECK		
DESIGN REVIEW		
APPROVED	M FLATTERS	02/19
PROF REGISTRATION:		

Stantec

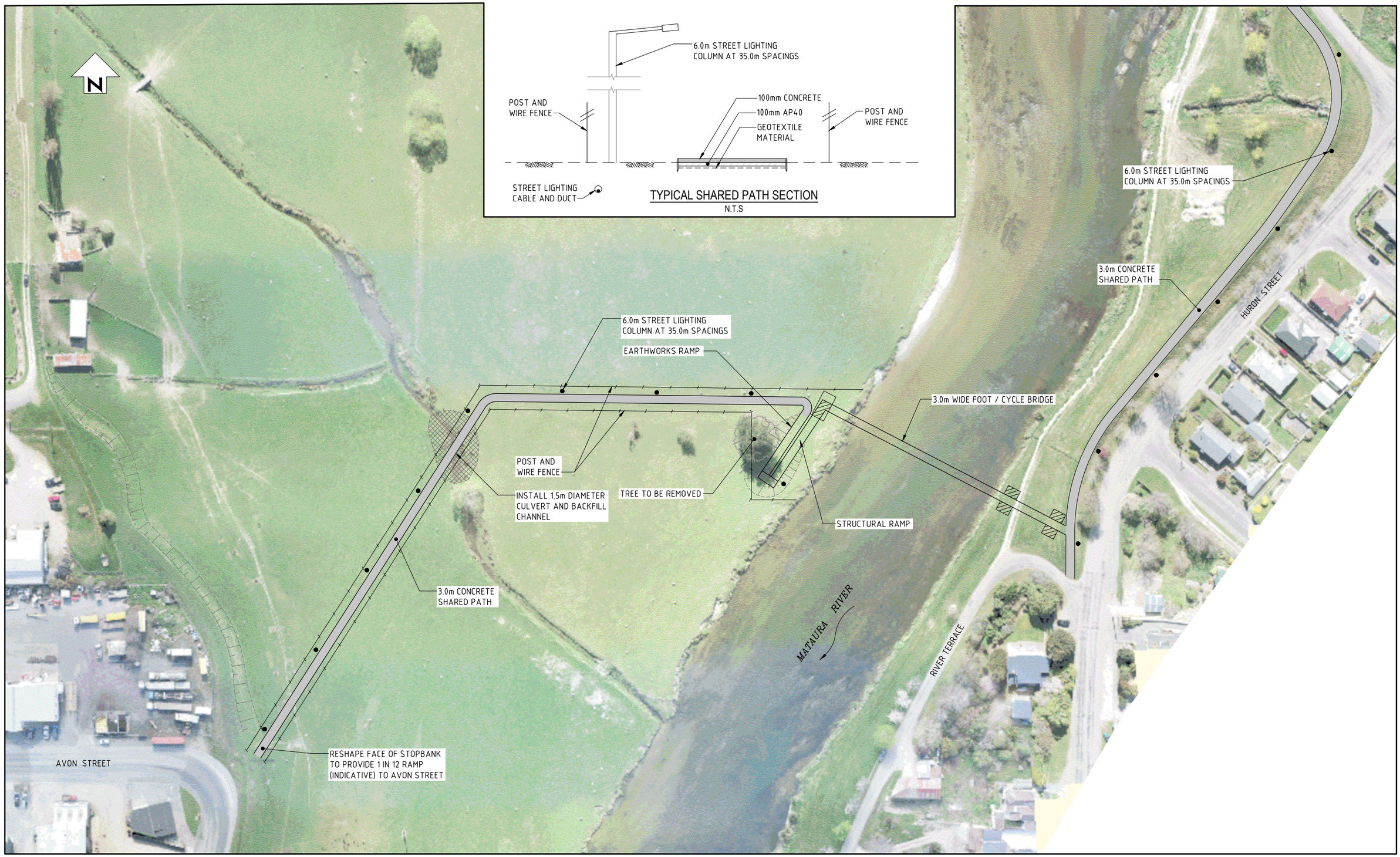
Client: GORE DISTRICT COUNCIL

LONGFORD SHARED PATH

OPTION 14
ROCK STREET CROSSING CONCEPT DESIGN

Status Stamp: **PRELIMINARY**
Date Stamp: **14/02/2019**
Coordinate System:
Scales: 1:500 (A1)
Datum:
Drawing No.: 80510426 - 01 - 001 - C 004
Rev.: C

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TYPICAL SHARED PATH SECTION
N.T.S

PLAN
N.T.S

DO NOT SCALE - IF IN DOUBT, ASK

ORIGINAL SIZE A1

NOT FOR CONSTRUCTION

REV	REVISIONS	DRN	CHK	APP	DATE

SURVEYED	L PATERSON	12/18
DESIGNED	M FLATTERS	01/19
DRAWN	B GREY	01/19
DRAWING CHECK		
DESIGN CHECK		
DESIGN REVIEW		
APPROVED	M FLATTERS	02/19
PROF REGISTRATION:		

Stantec

Client: GORE DISTRICT COUNCIL

LONGFORD SHARED PATH

OPTION 15
SURREY STREET CROSSING CONCEPT DESIGN

Status Stamp: **PRELIMINARY**
Date Stamp: **14/02/2019**
Coordinate System:
Scales: AS SHOWN
Datum:
Drawing No.: 80510426 - 01 - 001 - C 005
Rev.: C

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Appendix G Cost Estimates for Concept Designs

The following cost estimates have been prepared for the Shortlisted Options. These have been based on the concept design works shown on drawings for the corresponding options included in Appendix F.

Estimates have been based, wherever applicable, on recent tender rates received. However, it should be noted that the recent examples of long span pedestrian/cyclist bridges are relatively uncommon and limited information has been found upon which to base the estimates.

Unit rates for the Superstructure have been based on limited information and may be subject to high variances and low confidence levels given the final structural form selected and market conditions at the time of tender.

As estimates based on concept designs an overall confidence level of these estimates is -10% to +30. These confidence levels have been applied to the sensitivity analysis.

Option 14 – Rock Street

Stantec

		Project No:	80510527	Date:	8-Feb-19
				Prepared by	Checked by
			Quantities	mjf	ajq
Estimate for:			Rates	mjf	ajq
Longford Crossing - Gore District Council			Extensions	mjf	ajq
Rock Street Crossing					

ITEM	DESCRIPTION	Unit	Qty	Rate	Amount
	CONTRACT COSTS				
1	**Preliminary & General**				**$ 1,054,000**
1.1	Establishment & Disestablishment etc (30% of all items)	LS	1	$ 1,054,000	$1,054,000
2	**Earth Works**				**$ 78,200**
2.1	Earthworks ramp at Rock Street	m³	500	$ 70	$ 35,000
2.2	Earthworks ramp (from stopbank to Richmond Street)	m³	432	$ 100	$ 43,200
2.3	Concrete path excavation and disposal	m³	38	$ 190	$ 7,220
3	**Path, Lighting, Landscaping etc**				**$ 26,250**
3.1	Concrete shared path at top of stopbank west side (from bridge to Richmond St)	m²	375	$ 70	$ 26,250
5	**Bridge**				**$ 3,311,000**
	Piling				
5.1	Piling Plant Establishment	ea.	4	$ 25,000	$ 100,000
5.2	Set-up each pile	No.	8	$ 2,000	$ 16,000
5.3	8No. Reinforced concrete piles 1.2m diameter	m	48	$ 3,000	$ 144,000
	Substructure				
5.4	Insitu reinforced concrete foundation (incl reinforcing)	m³	400	$ 500	$ 200,000
5.5	Formwork	m²	240	$ 150	$ 36,000
	Superstructure				
5.6	Piers	ea.	2	$ 60,000	$ 120,000
5.7	Main Span	m²	280	$ 6,000	$ 1,680,000
5.8	2x Side Spans	m²	160	$ 6,000	$ 960,000
	Geotechnical Testing				
5.10	Boreholes and Testing	PS	1	$ 55,000	$ 55,000
7	**Lighting**				**$ 97,520**
7.1	Lighting control equipment for bridge including identification of and connection to power supply	PS	1	$ 5,000	$ 5,000
7.2	14w LED mounted on handrail of bridge	ea.	25.00	$ 3,000	$ 75,000
7.3	50 mm orange PVC with marker tape in trenches up to 1.5 m deep and 16mm 1 core neutral screen cable	m	219	$ 80	$ 17,520
7.4	28W LED and 6m Lighting Pole (on stopbank to link with Richmaond St)	ea.	4	$ 2,600	$ 10,400
8	**Excl. P&G**			**Sub Total**	**$ 3,512,970**
9	**Contingency @10% of works estimate (excl P&G)**			**10%**	**$ 351,297**
	ESTIMATED CONSTRUCTION COST				**$ 4,918,000**
	CONSTRUCTION VARIANCE			30%	$ 6,393,000
				-10%	$ 4,426,000
10	**DESIGN AND CONSTRUCTION MANAGEMENT**				
	BUSINESS CASE, PRELIMINARY AND DETAILED DESIGN @7% (ACENZ)			**7%**	**$ 344,000**
	CONSTRUCTION MONITORING @4% (ACENZ)			**4%**	**$ 197,000**
	TOTAL ESTIMATED FEES			**Sub Total**	**$ 541,000**
	FEES VARIANCE			30%	$ 703,300
				-10%	$ 486,900
	TOTAL ESTIMATED PROJECT COST				**$ 5,459,000**
	PROJECT VARIANCE			30%	$ 7,096,700
				-10%	$ 4,913,100

Option 15 – Surrey Street

Stantec

		Project No:	80510527	Date:	8-Feb-19
				Prepared by	Checked by
			Quantities	mjf	ajq
Estimate for:			Rates	mjf	ajq
Longford Crossing - Gore District Council			Extensions	mjf	ajq
Surrey Street Crossing					

ITEM	DESCRIPTION	Unit	Qty	Rate	Amount
	CONTRACT COSTS				
1	**Preliminary & General**				**$ 994,000**
1.1	Establishment & Disestablishment etc (30% of all items)	LS	1	$ 994,000	$ 994,000
2	**Earth Works**				**$ 173,980**
2.1	Earthworks ramp for structure	m³	1000	$ 100	$ 100,000
2.2	Earthworks modifications to stopbank at Avon Street	m³	432	$ 100	$ 43,200
2.3	Concrete path excavation and disposal	m³	162	$ 190	$ 30,780
3	**Path, Lighting, Landscaping etc**				**$ 113,400**
3.1	Concrete path across flood plain (Richmond Street)	m²	840	$ 70	$ 58,800
3.2	Concrete shared path at top of stopbank east side (adj to Huron St)	m²	780	$ 70	$ 54,600
4	**Landscape**				**$ 10,400**
4.1	Post and wire boundary fence across flood plain	m	520	$ 20	$ 10,400
5	**Bridge**				**$ 2,855,000**
	Piling				
5.1	Piling Plant Establishment	ea.	4	$ 25,000	$ 100,000
5.2	Set-up each pile	No.	8	$ 2,000	$ 16,000
5.3	6No. Reinforced concrete piles 1.2m diameter	m	36	$ 3,000	$ 108,000
	Substructure				
5.4	Insitu reinforced concrete foundation (incl reinforcing)	m³	400	$ 500	$ 200,000
5.5	Formwork	m²	240	$ 150	$ 36,000
	Superstructure				
5.6	Piers	ea.	2	$ 60,000	$ 120,000
5.7	Main Span	m²	220	$ 6,000	$ 1,320,000
5.8	Side Span	m²	60	$ 6,000	$ 360,000
5.9	Structural Ramps	m²	90	$ 6,000	$ 540,000
	Geotechnical Testing				
5.10	Boreholes and Testing	PS	1	$ 55,000	$ 55,000
6	**Culverts**				**$ 24,000**
6.1	DN 1500 RCRRJ Class 4. Depth 1.5m to 3.0m in flood plain	m	6.00	$ 4,000	$ 24,000
7	**Lighting**				**$ 135,200**
7.1	Lighting control equipment for bridge including identification of and connection to power supply	PS	1	$ 5,000	$ 5,000
7.2	14w LED mounted on handrail of bridge	ea.	16.00	$ 3,000	$ 48,000
7.3	50 mm orange PVC with marker tape in trenches up to 1.5 m deep and 16mm 1 core neutral screen cable	m	540	$ 80	$ 43,200
7.4	28W LED and 6m Lighting Pole (adj Huron Street and across flood plain)	ea.	15	$ 2,600	$ 39,000
8	**Excl. P&G**			**Sub Total**	**$ 3,311,980**
9	**Contingency @10% of works items (excl P&G)**			**10%**	**$ 331,198**
	ESTIMATED CONSTRUCTION COST				**$ 4,637,000**
	CONSTRUCTION VARIANCE			30%	$ 6,028,000
				-10%	$ 4,173,000
10	**DESIGN AND CONSTRUCTION MANAGEMENT**				
	BUSINESS CASE, PRELIMINARY AND DETAILED DESIGN @7% (ACENZ)			**7%**	**$ 325,000**
	CONSTRUCTION MONITORING @4% (ACENZ)			**4%**	**$ 185,000**
	TOTAL ESTIMATED FEES			**Sub Total**	**$ 510,000**
	FEES VARIANCE			30%	$ 663,000
				-10%	$ 459,000
	TOTAL ESTIMATED PROJECT COST				**$ 5,147,000**
	PROJECT VARIANCE			30%	$ 6,691,100
				-10%	$ 4,632,300

Appendix H Economics

Assessment completed in line NZ Transport Agency Economic Evaluation Manual SP11.

H.1 Base Data

Options	Details		
Do Nothing	Connection via SH1		
Option 15	New bridge at Surrey Street		
Option 14	New bridge at Rock Street		
Options	Bridge Length		
Do Nothing	0.13		
Option 15	0.085		
Option 14	0.085		
Parameters			
Discount Factor	6%		
Base date for costs and benefits	01 July 2018		
Time Zero	2018		
Year Start			
Do Nothing	0		
Option 15 (2020)	2		
Option 14 (2020)	2		
Route Length[1]	Cycling	Walking	
Do Nothing	6	5	
Options 15 and 14	6	5	
Length of separated path (Option 15)	0.6		
Length of separated path (Option 14)	0.52		
% separated path of full route (Option 15)	20%		
% separated path of full route (Option 14)	17%		
Additional Pedestrians[2]	100		
Existing Cyclists[3]	39		
Cyclists transferring to new bridge	90%		
Cyclists who'll avoid poor intersections	50%		
Cyclists who experience safety benefits	17.55		
New Cyclists[4]	115		
Existing + New Cyclists	150		
	Proportion of Users	$/h	
Work travel purpose	0%	$21.70	
Commuter	50%	$6.60	
Other	50%	$4.25	$5.43
Opt 2 additional ped/cyclist vs Opt 1	0%		
Cycling speed on SH vs New Bridge	80%		
Existing SH peds per day	64		
Existing SH peds transferring to bridge	70%		

Notes:

1. The EEM calculation is based on number of users, rather than trips.
2. Route length – The assessed route length has been taken as 6km for cyclist. 6km has been used as 3km represents the distance between the centroids of East Gore and the Gore CBD and assessed trips are those of commuters and school children who will all make a return journey over the bridge. 5km has been used for pedestrians as this represents a return journey of 2 x 2.5km trips, that equates to a 30min walk.

3. Additional pedestrians have been based on figures as outlined in the Council Trails Feasibility Study.
4. Existing cyclists based on 24 obtained from the EEM assessment and 15 school children.
5. New cyclists based on 52 commuters and 63 school children

H.2 Form SP11-7

	New and Existing cyclists			
	Buffers (km)	<0.4	0.4 to <0.8	0.8 to ≤ 1.6
1	Area (km^2)	0.12	0.24	0.80
2	Density per square kilometre	1,800.00	1,675.00	877.50
3	Population in each buffer **(3)** = **(1)** x **(2)**	216.00	402.00	702.00
4	Total population in all buffers (Sum of **(3)**)	1,320		
5	Commute share (single value for all)	1.80%		
6	Likelihood of new cyclist multiplier	1.04	0.54	0.21
7	Row **(7)** = **(3)** x **(6)**	224.64	217.08	147.42
8	Sum of row **(7)**	589.14		
9	Cyclist rate **(9)** = (**(5)** x 0.96) + 0.32%	2.05%		
10	Total existing daily cyclists **(10)** = **(4)** x **(9)**	39*	24.00*	
11	Total new daily cyclists **(11)** = **(8)** x **(9)**	115**	13.00**	

- EEM Calculated value = 24, actual value used = 39 with the inclusion of school children
- EEM Calculated value = 13, actual value used = 115 calculated from suppressed demand and with the inclusion of school children

H.3 Form SP11-4

		Do-minimum Cyclists	Do-minimum Peds		Option 15 Option Cyclists	Option 15 Option Peds	Option 14 Option Cyclists	Option 14 Option Peds
					CYCLISTS	PEDESTRIANS	CYCLISTS	PEDESTRIANS
2	Travel time data							
	Existing Walkers and/or cyclists (AADT) affected by the improvement				35	45	35	45
	Travel time cost (TTC) Table A4.1(b)				5.43	5.43	5.43	5.43
	Length of route (km)	L^{dm}	6.00	5.00	L^{opt} 6.00	5.00	6.00	5.00
	Mean cycling/walking speed	VS^{dm}	12.4	5	VS^{opt} 15.5	5	15.5	5
	Relative attractiveness Table SP11.1)		1	1	**1.84**	1	**1.83**	1
3	Annual TTC for the do-minimum							
	$\frac{AADT \times 365 \times L^{dm} \times TTC}{VS^{dm} \times RA^{dm}}$				$33,630	$88,710	$33,630	$88,710
4	Annual TTC for the option							
	$\frac{AADT \times 365 \times L^{opt} \times TTC}{VS^{opt} \times RA^{opt}}$				$14,622	$88,710	$14,664	$88,710
5	Value of annual TTC savings				$19,008	$0	$18,966	$0
						$19,008		**$18,966**

H.4 Form SP11-5

Option 14 and 15

Health and environment benefits for walking facility

Health and environment benefits for footpaths and other ped facilities

Benefit = number of additional pedestrians/day x length of facility (walk trip) 365 x $2.70

L	5	NPD	100	x 365 x $2.70 x DF	1.00	= $	492,750

Health and environment benefits for cycling facility

Health benefit for cycle lane, cycleways or increased shoulder widths

Benefit = number of additional cycle trips/day x length of facility in km x 365 x $1.40

L	6	NTD	115	x 365 x $1.40 x DF	1.00	= $	352,590

Safety benefits for cycling facility

Safety benefit in the absence of specific crash analysis

Benefit = number of new and existing cycle trips/day x 365 x $0.15

L	6	NSD	154	x 365 x $0.15 x DF	1.00	= $	8,432

Walk/Cycle	$845,340
Safety	$8,432

H.5 Benefits

Option 14

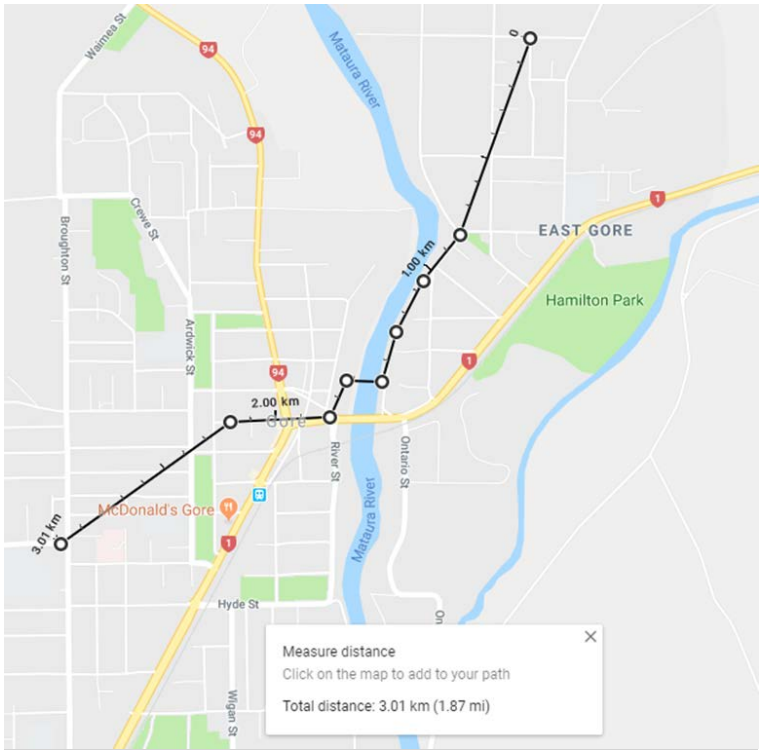
Travel time	$18,966	x Update factor (TT)	1.50	$28,449
Safety	$8,432	x Update factor (Safety)	1.06	$8,937
Cycling and Walking	$845,340	x Update factor (WCB)	1.21	$1,022,861
			Total	$1,060,248

Option 15

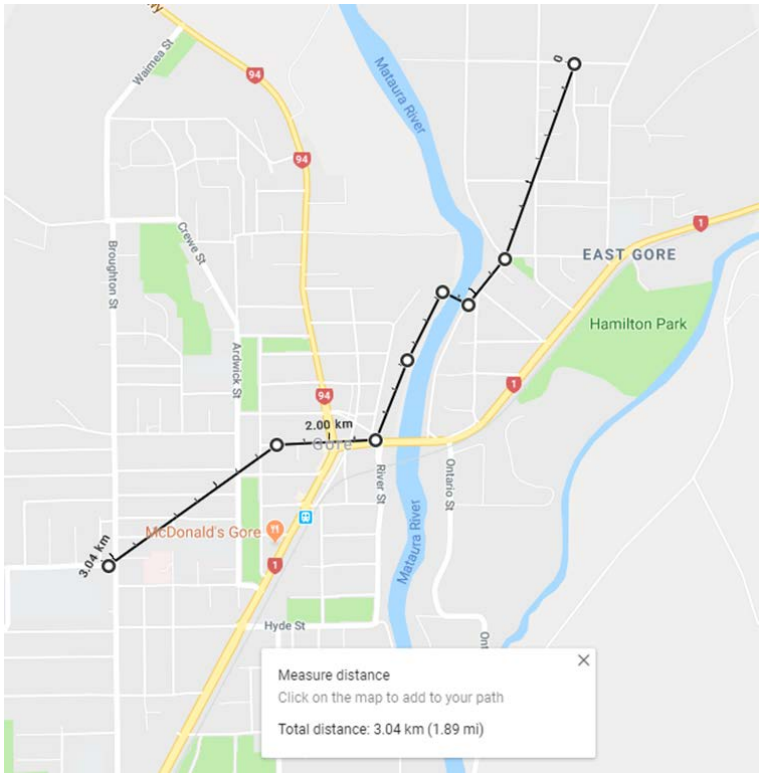
Travel time	$19,008	x Update factor (TT)	1.50	$28,513
Safety	$8,432	x Update factor (Safety)	1.06	$8,937
Cycling and Walking	$845,340	x Update factor (WCB)	1.21	$1,022,861
			Total	$1,060,861

Comparative trip lengths between Option 14, Option 15 and the existing bridge

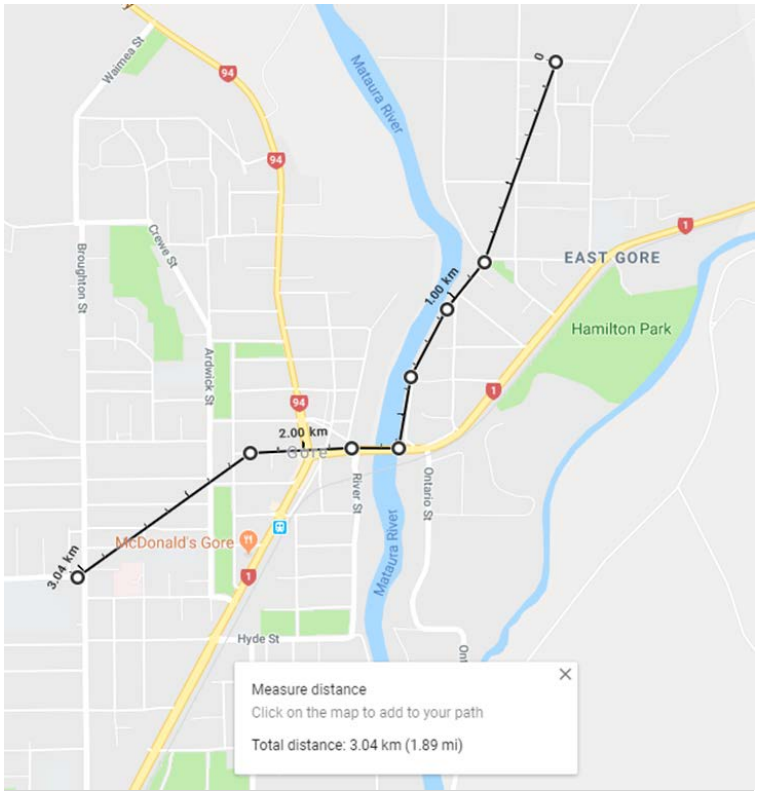
Images and measurements taken from Google Maps



Option 14 – 3.01km



Option 15 – 3.04km



Existing Bridge – 3.04km

H.6 Cost Estimates

Note Year 0 = 2018, Year 1 = 2019, Year 2 = 2010 etc.

	Do Nothing	Option 15 - Surrey St	Option 14 - Rock St
Land		$0	$0
Design		$510,000	$541,000
Construction		$4,637,000	$4,918,000
Annual Maintenance	$0	$2,000	$2,000
Periodic Maintenance	$0	$20,000	$20,000
	$0	$5,169,000	$5,481,000

Year Start

	Do Nothing	Option 1	Option 2
Land	0	1	1
Design	0	1	1
Construction	0	2	2
Annual Maintenance	0	4	4
Periodic Maintenance	5	11	11

Period

Every x years

	Do Nothing	Option 1	Option 2
Land	0	0	0
Design	0	0	0
Construction	0	0	0
Annual Maintenance	1	1	1
Periodic Maintenance	5	10	10

H.7 Timestream

Costs

Year Start	
Do Nothing	0
Option 15	2
Option 14	2

Year	Factors	Cost																Discounted		
	SPPWF	Land			Design			Construction			Annual Maintenance			Periodic Maintenance					
		Do Nothing	Option 15	Option 14	Do Nothing	Option 15	Option 2	Do Nothing	Option 15	Option 14	Do Nothing	Option 15	Option 14	Do Nothing	Option 15	Option 14	Do Nothing	Option 15	Option 14
0	1.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	$0	$0	$0
1	0.943	0	0	0	0	506000	541000	0	0	0	0	0	0	0	0	0	$0	$477,358	$510,377
2	0.890	0	0	0	0	0	0	0	4637000	4918000	0	0	0	0	0	0	$0	$4,126,913	$4,377,002
3	0.840	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	$0	$0	$0
4	0.792	0	0	0	0	0	0	0	0	0	0	2000	2000	0	0	0	$0	$1,584	$1,584
5	0.747	0	0	0	0	0	0	0	0	0	0	2000	2000	0	0	0	$0	$1,495	$1,495
6	0.705	0	0	0	0	0	0	0	0	0	0	2000	2000	0	0	0	$0	$1,410	$1,410
7	0.665	0	0	0	0	0	0	0	0	0	0	2000	2000	0	0	0	$0	$1,330	$1,330
8	0.627	0	0	0	0	0	0	0	0	0	0	2000	2000	0	0	0	$0	$1,255	$1,255
9	0.592	0	0	0	0	0	0	0	0	0	0	2000	2000	0	0	0	$0	$1,184	$1,184
10	0.558	0	0	0	0	0	0	0	0	0	0	2000	2000	0	0	0	$0	$1,117	$1,117
11	0.527	0	0	0	0	0	0	0	0	0	0	2000	2000	0	20000	20000	$0	$11,589	$11,589
12	0.497	0	0	0	0	0	0	0	0	0	0	2000	2000	0	0	0	$0	$994	$994
13	0.469	0	0	0	0	0	0	0	0	0	0	2000	2000	0	0	0	$0	$938	$938
14	0.442	0	0	0	0	0	0	0	0	0	0	2000	2000	0	0	0	$0	$885	$885
15	0.417	0	0	0	0	0	0	0	0	0	0	2000	2000	0	0	0	$0	$835	$835
16	0.394	0	0	0	0	0	0	0	0	0	0	2000	2000	0	0	0	$0	$787	$787
17	0.371	0	0	0	0	0	0	0	0	0	0	2000	2000	0	0	0	$0	$743	$743
18	0.350	0	0	0	0	0	0	0	0	0	0	2000	2000	0	0	0	$0	$701	$701
19	0.331	0	0	0	0	0	0	0	0	0	0	2000	2000	0	0	0	$0	$661	$661
20	0.312	0	0	0	0	0	0	0	0	0	0	2000	2000	0	0	0	$0	$624	$624
21	0.294	0	0	0	0	0	0	0	0	0	0	2000	2000	0	20000	20000	$0	$6,471	$6,471
22	0.278	0	0	0	0	0	0	0	0	0	0	2000	2000	0	0	0	$0	$555	$555
23	0.262	0	0	0	0	0	0	0	0	0	0	2000	2000	0	0	0	$0	$524	$524
24	0.247	0	0	0	0	0	0	0	0	0	0	2000	2000	0	0	0	$0	$494	$494
25	0.233	0	0	0	0	0	0	0	0	0	0	2000	2000	0	0	0	$0	$466	$466
26	0.220	0	0	0	0	0	0	0	0	0	0	2000	2000	0	0	0	$0	$440	$440
27	0.207	0	0	0	0	0	0	0	0	0	0	2000	2000	0	0	0	$0	$415	$415
28	0.196	0	0	0	0	0	0	0	0	0	0	2000	2000	0	0	0	$0	$391	$391
29	0.185	0	0	0	0	0	0	0	0	0	0	2000	2000	0	0	0	$0	$369	$369
30	0.174	0	0	0	0	0	0	0	0	0	0	2000	2000	0	0	0	$0	$348	$348
31	0.164	0	0	0	0	0	0	0	0	0	0	2000	2000	0	20000	20000	$0	$3,614	$3,614
32	0.155	0	0	0	0	0	0	0	0	0	0	2000	2000	0	0	0	$0	$310	$310
33	0.146	0	0	0	0	0	0	0	0	0	0	2000	2000	0	0	0	$0	$292	$292
34	0.138	0	0	0	0	0	0	0	0	0	0	2000	2000	0	0	0	$0	$276	$276
35	0.130	0	0	0	0	0	0	0	0	0	0	2000	2000	0	0	0	$0	$260	$260
36	0.123	0	0	0	0	0	0	0	0	0	0	2000	2000	0	0	0	$0	$245	$245
37	0.116	0	0	0	0	0	0	0	0	0	0	2000	2000	0	0	0	$0	$232	$232
38	0.109	0	0	0	0	0	0	0	0	0	0	2000	2000	0	0	0	$0	$218	$218
39	0.103	0	0	0	0	0	0	0	0	0	0	2000	2000	0	0	0	$0	$206	$206
40	0.097	0	0	0	0	0	0	0	0	0	0	2000	2000	0	0	0	$0	$194	$194
41	0.092	0	0	0	0	0	0	0	0	0	0	2000	2000	0	20000	20000	$0	$2,018	$2,018
42	0.087	0	0	0	0	0	0	0	0	0	0	2000	2000	0	0	0	$0	$173	$173
																	$0	**$4,650,913**	**$4,934,021**

Benefits

Benefits					
Calculated			Discounted		
Do Nothing	Option 15	Option 14	Do Nothing	Option 15	Option 14
$0	$0	$0	$0	$0	$0
$0	$0	$0	$0	$0	$0
$0	$1,060,311	$1,060,248	$0	$943,673	$943,617
$0	$1,060,311	$1,060,248	$0	$890,258	$890,204
$0	$1,060,311	$1,060,248	$0	$839,866	$839,815
$0	$1,060,311	$1,060,248	$0	$792,326	$792,279
$0	$1,060,311	$1,060,248	$0	$747,478	$747,433
$0	$1,060,311	$1,060,248	$0	$705,168	$705,125
$0	$1,060,311	$1,060,248	$0	$665,252	$665,212
$0	$1,060,311	$1,060,248	$0	$627,597	$627,559
$0	$1,060,311	$1,060,248	$0	$592,072	$592,037
$0	$1,060,311	$1,060,248	$0	$558,559	$558,525
$0	$1,060,311	$1,060,248	$0	$526,942	$526,911
$0	$1,060,311	$1,060,248	$0	$497,115	$497,085
$0	$1,060,311	$1,060,248	$0	$468,977	$468,949
$0	$1,060,311	$1,060,248	$0	$442,431	$442,404
$0	$1,060,311	$1,060,248	$0	$417,388	$417,363
$0	$1,060,311	$1,060,248	$0	$393,762	$393,738
$0	$1,060,311	$1,060,248	$0	$371,473	$371,451
$0	$1,060,311	$1,060,248	$0	$350,447	$350,426
$0	$1,060,311	$1,060,248	$0	$330,610	$330,590
$0	$1,060,311	$1,060,248	$0	$311,896	$311,878
$0	$1,060,311	$1,060,248	$0	$294,242	$294,224
$0	$1,060,311	$1,060,248	$0	$277,587	$277,570
$0	$1,060,311	$1,060,248	$0	$261,874	$261,858
$0	$1,060,311	$1,060,248	$0	$247,051	$247,036
$0	$1,060,311	$1,060,248	$0	$233,067	$233,053
$0	$1,060,311	$1,060,248	$0	$219,875	$219,861
$0	$1,060,311	$1,060,248	$0	$207,429	$207,416
$0	$1,060,311	$1,060,248	$0	$195,688	$195,676
$0	$1,060,311	$1,060,248	$0	$184,611	$184,600
$0	$1,060,311	$1,060,248	$0	$174,161	$174,151
$0	$1,060,311	$1,060,248	$0	$164,303	$164,293
$0	$1,060,311	$1,060,248	$0	$155,003	$154,994
$0	$1,060,311	$1,060,248	$0	$146,229	$146,220
$0	$1,060,311	$1,060,248	$0	$137,952	$137,944
$0	$1,060,311	$1,060,248	$0	$130,143	$130,136
$0	$1,060,311	$1,060,248	$0	$122,777	$122,769
$0	$1,060,311	$1,060,248	$0	$115,827	$115,820
$0	$1,060,311	$1,060,248	$0	$109,271	$109,264
$0	$1,060,311	$1,060,248	$0	$103,086	$103,080
$0	$1,060,311	$1,060,248	$0	$97,251	$97,245
$0	$1,060,311	$1,060,248	$0	$91,746	$91,740
			$0	**$15,142,462**	**$15,141,552**

H.8 Benefit Cost Ratio

H.8.1 Base Estimate

	Benefit	Nett Cost	BCR
Do Nothing	$0	$0	-
Option 15 - Surrey St	$15,142,462	$4,654,687	3.25
Option 14 - Rock St	$115,141,552	$4,934,021	3.07

H.8.2 Lower Confidence (-10%)

	Benefit	Nett Cost	BCR
Do Nothing	$0	$0	-
Option 15 - Surrey St	$15,142,462	$4,178,559	3.62
Option 14 - Rock St	$15,141,552	$4,433,445	3.42

H.8.3 Upper Confidence (+30%)

	Benefit	Cost	BCR
Do Nothing	$0	$0	-
Option 15 - Surrey St	$15,142,462	$6,100,248	2.48
Option 14 - Rock St	$15,141,552	$6,468,021	2.34

Appendix I LOS Comparison

Comparative LOS Assessment of the Existing Crossing and Option 15.

Assessment based on assessment from Austroads Research Report AP-R475-15 – Level of Service Metrics (for Network Operations Planning).

Description	LOS	Assessment Criteria	Existing	Option 15	Comments
Travel speed	A-B	• High quality, high priority links which permit quick, unhindered travel by bicycle. • Typical cyclist operating speeds are largely unconstrained (e.g. can travel at speeds greater than 25 km/h). • No or minimal delay at intersections (e.g. grade separated crossing or at grade crossing of minor local road).			
	C-D	• High quality routes with seamless connections that permit somewhat unhindered travel by bicycle. • Typical cyclist operating speeds are somewhat constrained (e.g. cyclist limited to a speed range from 20 to 25 km/h). • Some delay at intersections (e.g. at-grade crossing of collector road or minor arterial; short signal phase at signalised intersections or cyclists rarely made to wait a full cycle based on arrival).			
	E-F	• Low speed, shared environment which permits only hindered travel by bicycle. • Typical cyclist operating speeds are constrained (e.g. cyclist speed less than 20 km/h. • Significant delay at intersection (e.g. at-grade crossing of busy arterial road and therefore gap times are long; cyclists likely to wait a full cycle based on arrival).			
	N/A	• The measure is not applicable to the site and the proposal being assessed.			Travel speed is not an identified issue at the site (i.e. there does not appear to be a relationship

Description	LOS	Assessment Criteria	Existing	Option 15	Comments
					between the type of infrastructure provided and the travel speed LoS for cyclists in this instance. It is therefore difficult to accurately rate the existing arrangement as the link may not be high quality, but the travel time speed is apparently okay.
Congestion	A-B	• Cyclists are unimpeded or only slightly restricted to choose their speed.			Congestion is not an identified issue at the site, however cyclists on the existing bridge will likely have to adjust their speed (typically up) to lessen conflict with bridge motor traffic or pedestrians. New facility anticipated to result in only slight restrictions (possibly cycle vs pedestrians etc)
	C-D	• Cyclists are somewhat impeded in their choice of speed.			
	E-F	• Cyclists are restricted and their choice of speed is dictated by others.			
	N/A	• N/A – The measure is not applicable to the site and the proposal being assessed.			
Grades	A-B	• Flat grades (e.g. 0 to 2%).			
	C-D	• Flat to steep grades (e.g. 2 to 5%).			This is somewhat dependant on the final design, however a ramp at the west end and ramps connections on and off the existing stopbanks will be required.
	E-F	• Steep grades; steps or stairs (e.g. > 5% sustained for 50 to 100 m).			
	N/A	• N/A – The measure is not applicable to the site and the proposal being assessed.			
Risk of cycle-to-cycle /	A-B	• No to limited risk. • Good line of sight.			

Description	LOS	Assessment Criteria	Existing	Option 15	Comments
pedestrian crash		• Speed differential low (e.g. similar cyclist type such as all recreational cyclists).			
	C-D	• Medium risk, some platooning of cyclists and cyclists slowing down for pedestrians. • Good to fair line of sight. • Speed differential medium (e.g. some mixture in cyclist type such as predominantly recreational cyclists with some commuter cyclists).			Public survey highlighted conflicts on existing bridge with cyclists using the footpaths to cross the bridge. Need crossing will may still result in pedestrian/cyclist conflicts but will be comprise an appropriate width shared path.
	E-F	• High risk, crashes can result in several upstream cyclists to brake abruptly or crash. • Poor line of sight (e.g. blind curves). • Speed differential high (e.g. mixture in cyclist type such as recreational cyclists combined with family cyclists, commuter cyclist and training cyclists).			
	N/A	• N/A – The measure is not applicable to the site and the proposal being assessed.			
Risk of crash caused by surface unevenness or slippage	A-B	• Sealed pavement that is well-maintained with good drainage.			New crossing assumed to be of good quality
	C-D	• Sealed pavement with good drainage but with some defects. • • Some debris on path.			Public feedback showing highlight uneven surface over footpath of existing bridge
	E-F	• Unsealed pavement or sealed pavement with significant defects. • Significant debris on path. • Poor drainage. • Significant slippery pavement materials (e.g. tram rails or road markings).			
	N/A	• N/A – The measure is not applicable to the site and the proposal being assessed.			
Risk of crash with stationary hazards	A-B	• No or limited stationary hazards on the path and adjacent to the path (e.g. well-clear of street furniture			

Description	LOS	Assessment Criteria	Existing	Option 15	Comments
		(poles, seats, bins), trees, garbage, parked cars etc.).			
	C-D	• Occasional or a low density of stationary hazards on the path or adjacent to the path (e.g. parked cars that are frequently accessed such as in strip shopping centres, street furniture (poles, seats, bins), trees, garbage, etc.). • Occasional parked cars or cars coming off parking that can block or hinder the natural path of cyclists.			
	E-F	• Frequent or a high density of stationary hazards on the path or adjacent to the path (e.g. parked cars that are frequently accessed such as in strip shopping centres, street furniture (poles, seats, bins), trees, garbage, etc.). • Frequent parked cars or cars coming off parking that can block or hinder the natural path of cyclists.			The existing crossing has a pedestrian fence located on one side meaning cyclists may conflict with it or have limited space to evade drivers. New crossing assumed (subject to design) deal with this issue.
	N/A	• N/A – The measure is not applicable to the site and the proposal being assessed.			
Risk of cycle-to-motor vehicle crash at mid-blocks	A	• Exclusive bicycle facility in a low risk road environment - refer to Table A 6.			
	B	• Exclusive bicycle facility in a low to medium risk road environment or no bicycle facility in a low risk road environment - refer to Table A 6.			
	C	• Exclusive bicycle facility in a medium to high risk road environment or no bicycle facility in a low to medium risk road environment - refer to Table A 6.			
	D	• Exclusive bicycle facility in a medium to high risk road environment or no bicycle facility in a medium risk road environment - refer to Table A 6.			Existing crossing rating on the boundary between D and E. New crossing will be off road and (subject to confirmation) link into low risk road environment.

Description	LOS	Assessment Criteria	Existing	Option 15	Comments
	E	• Bicycle only lane (not Copenhagen style facility where the bicycle facility is behind a kerb) in a high risk road environment or no bicycle facility in a medium to high risk road environment - refer to Table A 6.			
	F	• No bicycle facility in a high risk road environment - refer Table A 6.			
	N/A	• N/A – The measure is not applicable to the site and the proposal being assessed.			
Risk of cycle-to motor vehicle crash at intersections and/or driveways	A	• No crossings of motor vehicles or fully separated crossings (including no or limited driveways). • Fully controlled crossings of motor vehicles at low to medium volume roads, without concurrent movements (e.g. exclusive bicycle movement).			
	B	• Crossings limited to driveway crossing only.			
	C	• Uncontrolled motor vehicle crossings at low volume, low speed roads (e.g. give way or roundabout residential street intersection). • Fully controlled crossings of motor vehicles at high volume roads, without concurrent movements (e.g. exclusive bicycle movement). • Signalised intersection with high volumes, large numbers of cyclists on the through movement but fully controlled right turns.			
	D	• Uncontrolled motor vehicle crossing at medium volume, medium speed roads (e.g. give way or roundabout collector, sub-arterial road intersection). • Fully controlled crossings of motor vehicles at medium volume roads, with concurrent movements (e.g. no exclusive bicycle movement). • Signalised intersection with high volumes, large numbers of cyclists on the			LoS given as the existing crossing connects with a roundabout on the western side of the river. New crossing rating dependant on design

Description	LOS	Assessment Criteria	Existing	Option 15	Comments
		through movement and filtered right turns.			
	E	• Uncontrolled motor vehicle crossing at medium to high volume roads (e.g. non signalised arterial road intersection).			
	F	• Uncontrolled vehicles at high volume, high speed intersecting roads (e.g. major high speed arterial road roundabout).			
	N/A	• N/A – The measure is not applicable to the site and the proposal being assessed.			
Access to and ability to park close to destination	A	• Proper bicycle parking facilities are readily available immediately adjacent to key destinations and can be accessed directly from the bicycle network. Parking is suitable for likely trip purpose (racks for occasionally or short-term users, secure cages/lockers for regular or long-term users).			
	B	• Proper bicycle parking facilities are readily available within close walking distance to key destinations and can be accessed directly from the bicycle network. Parking is suitable for likely trip purpose.			
	C	• Proper bicycle parking facilities are readily available within a moderate walking distance to key destinations and can be accessed directly from the bicycle network.			
	D	• Proper bicycle parking facilities are somewhat available within a moderate walking distance to key destinations, or parking at or near a location is located a moderate walking distance from the bicycle network.			
	E	• Proper bicycle parking facilities are somewhat available within a long walking distance to key			

Description	LOS	Assessment Criteria	Existing	Option 15	Comments
		destinations, or parking at or near a location is located a long walking distance from the bicycle network.			
	F	• Proper bicycle parking facilities are not available.			
	N/A	• N/A – The measure is not applicable to the site and the proposal being assessed.			The crossing is essentially a mid-block link issue therefore this metric is not considered applicable
Suitability	A	• Cycling highly suitable as follows: o off-road facility for use by bicycles only (e.g. off-road bicycle only path).			
	B	• Cycling suitable as follows: o off-road shared-use path with low pedestrian numbers o on-road bicycle lane separated from car parking or road shoulder with no car parking on a low-volume road o on-road shared-traffic environment marked on a low-speed and low-volume road.			Assumed to be off-road shared use path with low pedestrian numbers (higher pedestrian use could see this rating drop to C)
	C	• Cycling moderately suitable as follows: o off-road shared-use path with medium pedestrian numbers o on-road bicycle lane shared with minimal car parking or road shoulder with minimal car parking on a low-volume road o on-road shared-traffic environment on medium-volume road and low speed road.			
	D	• Cycling moderately unsuitable as follows: o off-road shared-use path/zone with high pedestrian numbers or speed restrictions (e.g. 10 km/h) o on-road bicycle lane or road shoulder on high-volume road			

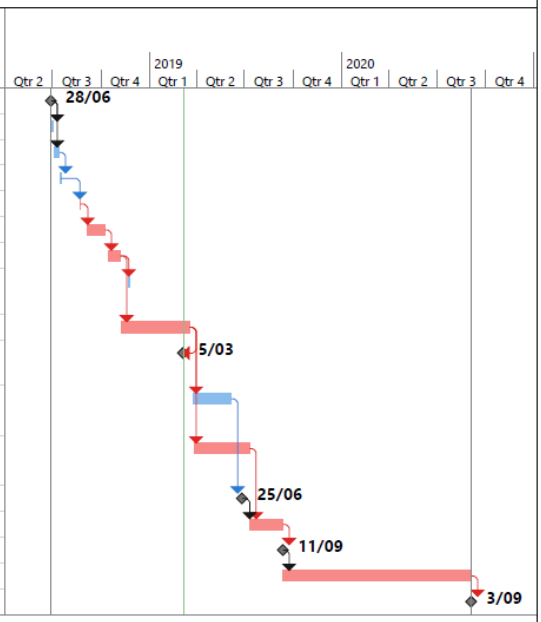
Description	LOS	Assessment Criteria	Existing	Option 15	Comments
		○ on-road shared-traffic environment on medium to high volume or medium to high speed road.			
	E	• Cycling unsuitable as follows: ○ cycling significantly impeded due to physical obstructions that require getting off the bike (e.g. stairs) ○ cycling is unsuitable due to inadequate separation from traffic that is either high speed or high volume.			Cycling unsuitable due to inadequate separation from high volume
	F	• Cycling highly unsuitable or prohibited: ○ cycling prohibited ○ cycling is unsuitable due to inadequate separation from traffic that is both high speed and high volume.			
	N/A	• N/A – The measure is not applicable to the site and the proposal being assessed.			
Traveller information available, including signposting information available, including signposting	A-B	• Complete and clear signposting with routes and distances is fully available (with consideration to the nature of cyclists and the area, e.g. a tourist area would require more information than a local neighbourhood).			New crossing assumed to be complete with appropriate signposting.
	C-D	• Signposting with routes and distances is partially available.			
	E-F	• Signposting with routes and distances is inadequate or missing.			No applicable signs identified on-site (desktop)
	N/A	• N/A – The measure is not applicable to the site and the proposal being assessed.			
Aesthetics	A-B	• Clean and aesthetically pleasing (e.g. greenery, view, design, artwork, etc.).			Both the existing and the proposed cross the Mataura River with a pleasant outlook.
	C-D	• Clean.			
	E-F	• Unclean (graffiti, garbage, etc.).			
	N/A	• N/A – The measure is not applicable to the site and the proposal being assessed.			

Description	LOS	Assessment Criteria	Existing	Option 15	Comments
Comfort and convenience features	A-C	• Good comfort and convenience features (bike parking, noise protection, change facilities, lockers, etc.).			
	D-F	• Poor to fair comfort and convenience features (no parking, excessive noise, no change facilities, no lockers, etc.).			
	N/A	• N/A – The measure is not applicable to the site and the proposal being assessed.			The crossing is essentially a mid-block link issue therefore this metric is not considered applicable
Security	A-C	• Good to high level security (e.g. well-lighted, no or limited history of criminality or disturbance, sufficient number of cyclists, etc.).			No information held on history of criminality. Existing crossing has street lights and is close to a well trafficked road. Northern option may rate lower (as further away) but might not reach D status - subject to design.
	D-F	• Poor to fair level security (e.g. not well-lighted, with history of criminality or disturbance, low number of cyclists, etc.).			
	N/A	• N/A – The measure is not applicable to the site and the proposal being assessed.			
Pavement ride quality	A-B	• Road surface is smooth and even.			New crossings assumed to also be well constructed and maintained.
	C-D	• Road surface is moderately smooth and even.			Some negative public comments received about uneven footway over existing bridge that is used by many cyclists
	E-F	• Road surface is not smooth and even.			
	N/A	• N/A – The measure is not applicable to the site and the proposal being assessed.			

Appendix J Proposed Delivery Schedule

Longford Shared Path Project - Gore District Council

ID	Ta Mo	Task Name	Duration	Start	Finish
1		**Start**	0 days	Thu 28/06/18	Thu 28/06/18
2		Develop budgeting strategy	3 days	Thu 28/06/18	Mon 2/07/18
3		Prepare and submit the Point of Entry	7 days	Thu 5/07/18	Fri 13/07/18
4		Notify NZTA	1 day	Mon 16/07/18	Mon 16/07/18
5		ILM (Investment Logic Mapping) workshop	1 day	Wed 22/08/18	Wed 22/08/18
6		Develop Strategic Case	23 days	Thu 6/09/18	Mon 8/10/18
7		NZTA endorsement for Strategic Case	15 days	Tue 16/10/18	Tue 6/11/18
8		Options assessment stakeholders workshop	1 day	Fri 23/11/18	Fri 23/11/18
9		Develop Business Case	82 days	Thu 8/11/18	Mon 18/03/19
10		The Council endorsement of the draft business case	0 days	Tue 5/03/19	Tue 5/03/19
11		Funding application review and approval by NZTA	48 days	Mon 25/03/19	Wed 5/06/19
12		Planning, specimen design and tender documents	70 days	Thu 28/03/19	Wed 10/07/19
13		The Council approval/ TIO update	0 days	Tue 25/06/19	Tue 25/06/19
14		Tender process (ECI)	45 days	Thu 11/07/19	Wed 11/09/19
15		Contract award	0 days	Wed 11/09/19	Wed 11/09/19
16		Detailed design and construction	12 mons	Thu 12/09/19	Thu 3/09/20
17		**Finish**	0 days	Thu 3/09/20	Thu 3/09/20



Updated on 07 March 2019 Page 1

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