Ashburton Second Urban Bridge and Associated New Road

Option Assessment Report

Ashburton District Council

Ashburton Second Urban Bridge and Associated New Road

Option Assessment Report

Ashburton District Council

Prepared By
Bill Rice
Senior Transportation Engineer

Reviewed By
Richard Landon Lane
Senior Transportation Engineer

Opus International Consultants Ltd
Christchurch Office
20 Moorhouse Avenue
PO Box 1482, Christchurch Mail Centre,
Christchurch 8140
New Zealand

Telephone: +64 3 363 5400
Facsimile: +64 3 365 7858

Date: September 2013
Reference:
Status: Final

Contents

1 Executive Summary..... 2

2 Introduction..... 3
2.1 Background 3

3 Ashburton Transportation Study (2006 – 2008)..... 5
3.1 Physical Options Assessment Process 5
3.2 Assessment of Bridge Options 6

4 Ashburton Second Bridge Issues and Options Report (2010) 12
4.1 Options Considered..... 12
4.2 Option Assessment..... 14

5 Additional Investigations (2010) 17
5.1 Options Considered..... 17
5.2 Option Assessment Methodology 19
5.3 Option Assessment..... 24
5.4 Final Option Assessment 28

Appendices:

Appendices A – D are A4 size, and Appendices E – H are A3 size and bound separately

Appendix A: Ashburton Transportation Study LTMA & RMA Assessment Summary

Appendix B: Issues and Options Assessment Criteria Workshop Notes

Appendix C Issues and Options Assessment

Appendix D Geotechnical Desk top Study

Appendix E Issues and Options Drawings

Appendix F Additional Investigations - Overall layout drawing – all options

Appendix G Additional Investigations – Detailed layout drawings – each option

Appendix H Additional Investigations – Option Assessment

1 Executive Summary

There have been three distinct phases in the process to identify a preferred route for a second bridge across the Ashburton River in or near the Ashburton, namely the Ashburton Transportation Study (2006 – 2008), the Ashburton Second Bridge Issues and Options Report (2009 – 2010), and the Ashburton Second Bridge Additional Investigations (2010).

Between them, these phases have considered a broad range of options for a second bridge location, including bypasses to the east and west of Ashburton, options within the urban area of Ashburton, both east and west of the existing SH1 bridge, and options within the State Highway 1 (SH1) / South Island Main Trunk Railway (SIMT) corridor.

The options have been assessed against a wide range of criteria including technical, social, cultural, environmental and economic criteria, with each phase assessing the options against a different mix of criteria. Each phase has identified options which link Chalmers Avenue with the area to the east of Tinwald, including the eastern edge of the current urban area, as the preferred options.

On the surface some of the options, including bypass options, and increasing the capacity on the existing corridor (such as four laning the existing SH1 or better utilising Melcombe Street) appear attractive. However, closer investigation has identified a number of key factors which make those options less attractive, or the Chalmers avenue options more attractive, including the following:

Traffic Counts: A number of traffic surveys have been used to inform the option assessment process. A number plate survey at several locations throughout Ashburton was conducted in 2006, and repeated using infra-red cameras in 2012. These counts were used to identify vehicle origin and destination information at peak times. NZTA and ADC regular tube counts since 2000 were also used as a sensibility check for the number plate surveys, and to provide traffic volumes in locations other than those surveyed for the number plate surveys.

All of the traffic count information is consistently indicating that only a small proportion (approximately 20% depending on time) of the traffic on the existing Ashburton River Bridge is traffic travelling through Ashburton on SH1. This therefore suggests that an option bypassing Ashburton will be less effective at reducing traffic on the existing bridge than an option linking the urban areas to the north and south of the river.

Chalmers Avenue: Chalmers Avenue is a wide median divided road with a large amount of excess capacity. Options using Chalmers Avenue make use of underutilised existing infrastructure.

Existing Transport Corridor: Options to increase the capacity of the existing SH1, SIMT transport corridor through Ashburton were considered. These included four laning the existing SH1 route, and using Melcombe Street and a new bridge north of the existing rail bridge.

The existing transport corridor is wide enough for two roads and the railway to run parallel to each other. However, in many of the locations where cross roads join Melcombe Street and SH1, and cross the railway line, there is insufficient room for large vehicles to stop clear of the railway line.

Any new railway level crossing would also need to be at an angle of between 70 and 110 degrees to the railway in order to meet current design standards. This will necessitate large curves on the roads running parallel to, and then crossing the railway, thereby requiring large areas of private land.

2 Introduction

This "Ashburton Second Urban Bridge Options Assessment Report" describes :

- The options which have been considered at each stage of the Ashburton Transportation Study and Ashburton Second Urban Bridge projects
- The process that was used to assess those options
- The results of the assessment.

2.1 Background

Ashburton town (the Ashburton District's largest population centre) is situated on the Canterbury Plains approximately midway between Christchurch and Timaru. The town straddles State Highway 1 (SH1) and the South Island Main Trunk railway (SIMT). The State Highway and the railway make up the primary South Island transportation corridor. The town is bisected by the Ashburton River, which runs more or less perpendicular to SH1 and the SIMT. The existing Ashburton river bridge is the only means of crossing the Ashburton River near to SH1. The nearest alternative route across the Ashburton River involves a detour of approximately 60 km.

A second road bridge across the Ashburton River within or near the Ashburton urban area has been discussed for some years. The process of identifying a site for the bridge and a route for associated roading started in earnest with the Ashburton Transportation Study (2006 – 2008), and has continued through the Ashburton Second Urban Bridge Issues and Options and Additional Investigations reports.

2.1.1 Ashburton Transportation Study

In 2005 Transit New Zealand (now the New Zealand Transport Agency (NZTA)) and Ashburton District Council commissioned Opus to identify present and future transportation demands within the Ashburton urban area through to 2026, and to recommend measures to optimise the performance of the land transport system (the Ashburton Transportation Study).

The Ashburton Transport Study identified the main future issue to be the ability of State Highway 1 to cope with future increasing traffic volumes, through the Ashburton urban area, particularly at the Ashburton River Bridge. It also identified route security issues if the existing bridge was closed for any reason, including isolated incidents on the bridge or wider natural disasters.

A strategy of actions was recommended in the Ashburton Transport Study. One of these recommendations was to provide a second bridge across the Ashburton River. The recommendations of the study have been adopted by the NZTA. The Ashburton District Council has also adopted the recommendations of the study excluding the site for the second bridge. This was to follow a separate consultation process.

2.1.2 Second Bridge Issues and Options Report

An Issues and Options Report For a Second Bridge Across the Ashburton River was prepared in January 2010. This report confirmed that the most significant issues for the existing bridge were its capacity to carry the future traffic demand, and route security issues should the bridge be closed due to an incident on the bridge or a wider event such as a flood or earthquake.

The Issues and Options Report identified twelve options for a second bridge route. These options were considered against nine criteria. The options and criteria are described in Section 4.1.

The two options which best met these criteria were the Chalmers Avenue to east of Tinwald and the Chalmers Avenue to Grove Street options.

2.1.2.1 Consultation on the Options identified in the Issues and Options Report

Extensive public consultation, including a Public Meeting, Community Open Days, and a mail out to affected residents, was carried out following the release of the Issues and Options Report. The results of this consultation are detailed in the Consultation Report dated May 2010, and appended to the Notice of Requirement. In summary, the consultation confirmed a high level of opposition from the Tinwald community to the Chalmers Avenue to Grove Street option, and to a lesser extent the Chalmers Avenue to east of Tinwald option.

2.1.3 Additional Investigations

Following receipt of Community feedback on those options, Council then commissioned further investigations in 2011. These additional investigations include the following:

- Social Impact Assessment (carried out by Taylor Baines and Associates);
- Formation, facilitation and support for a Community Reference Group (carried out by Taylor Baines and Associates); and
- Further detailed investigations of six options, including bypass options, options at the end of Chalmers Avenue, and options near the existing SH1 / railway corridor. The options considered are described in Section 5.1.

A multi criteria assessment was carried out on each option. The multi criteria assessment identified three routes which clearly best met the project objectives. These were Chalmers Avenue to Grove Street, Chalmers Avenue to East of Tinwald Urban, and Chalmers Avenue to East of Tinwald Rural. Of those three, the Chalmers Avenue to East of Tinwald options scored significantly better than the Grove Street option. The additional investigations are described in The Additional Investigations Report (Opus, January 2011).

Further investigations were commissioned in 2012 to compare the three routes which best met the project objectives. These investigations included further traffic surveys, traffic modelling, and acoustic assessment. These investigations are described in the Ashburton Second Bridge Technical Investigations 2012 Report (October 2012)

The two east of Tinwald options were identified as Council's preferred options for a further round of consultation. The Ashburton Second Urban Bridge Technical Response to Feedback (October 2012) addressed, from a technical perspective, the key issues raised during consultation.

Council decided to proceed to Notice of Requirement with the Chalmers Avenue to East Tinwald – Urban Option A.

3 Ashburton Transportation Study (2006 – 2008)

The Ashburton Transportation Study (ATS) included a number of stages:

- Issues and Options Report (June 2006)
- Options Identification Report (September 2006)
- Options Assessment Report (April 2007)
- Final Report (April 2008) – This report summarised the previous three reports

The Issues Identification Report of this study found that most of the Ashburton transportation network is likely to function adequately for the next twenty years. That Report did, however, highlight a number of issues within the Ashburton transportation system. Generally those issues were related to the ability of State Highway 1 to cope with increasing traffic volumes, through the Ashburton urban area, particularly at the Ashburton River Bridge.

The Options Identification Report identified a number of options to address the issues highlighted. These options fall into two broad categories, namely management options and physical options.

The management options included the following:

1. Consider accessibility and mobility issues when considering land use changes.
2. Consider implementation of integrated urban design guidelines which cover the all aspects of urban design. The transportation related aspects could include:
    a. A parking strategy.
    b. Limiting road connectivity through and between subdivisions, whilst maintaining connectivity for key routes.
    c. Encouraging good pedestrian and cycle connectivity through and between subdivisions.
    d. Enabling employment within walking and cycling distance of residential areas.
    e. Limiting low density developments which result in long travel distances to local facilities.
3. Investigate the viability of operating a workers bus to specific industrial areas.
4. Investigate viability of a bus service using small buses (20 to 30 seats)
5. Investigate preparation and implementation of Business Travel Plans

3.1 Physical Options Assessment Process

The following physical options which were recommended for further analysis in the Options Identification Report of the ATS, were considered in further detail in Options Assessment Report:

1. Investigate signalisation of an intersection in Tinwald;

2. Investigate the removal of parking on SH1 to provide four lanes, or a clearway;
3. Investigate options for the Dobson Street West, Kermode Street, SH1 intersection, including alternative accesses to Dobson Street West;
4. Investigate options for a new link across the Ashburton River;
5. Investigate options to provide safe pedestrian and cycle routes to the Intermediate School and College, including intersection upgrades or separate pedestrian and cycle routes;
6. Investigate options to improve pedestrian and cycle access across the Ashburton River; and

Section 3.2 below is the assessment of the "investigate options for a new link across the Ashburton River", reproduced from the Options Assessment Report of the Ashburton Transportation Study.

3.2 Assessment of Bridge Options

3.2.1 Existing Situation

State Highway 1 crosses the Ashburton River via a two lane road bridge. The nearest alternative route over the river involves a 60km round trip detour. A shared cycle and pedestrian pathway is attached on the southbound side of the bridge. A cycle way is attached on the northbound side of the river.

A rail bridge is situated parallel to the road bridge, approximately 40m upstream.

3.2.2 Problem Definition

The Ashburton River Bridge was included in the Saturn model of the Ashburton network. The results of the model are summarised below in Table 3-1.

		AM			IP			PM		
Year	**Dir**	**Flow (veh/h)**	**Speed (km/h)**	**LOS**	**Flow (veh/h)**	**Speed (km/h)**	**LOS**	**Flow (veh/h)**	**Speed (km/h)**	**LOS**
2006	NB	850	51	C	800	52	C	800	51	C
	SB	600	55	B	900	50	C	1,200	46	D
2016	NB	1,000	48	C	850	50	C	1000	46	C
	SB	750	53	C	1000	49	C	1,400	41	D
2026	NB	1,450	39	D	1,000	46	C	1,350	39	D
	SB	1,100	46	D	1,100	46	D	1,450	39	E

Table 3-1 Performance of the Ashburton River Bridge

SH1 southbound across the Ashburton River Bridge is currently showing signs of congestion, returning a LOS D result in the PM peak. This indicates that the flow across the bridge is beginning to suffer through a lack of capacity.

Number plate counts at a number of locations around Ashburton indicated that approximately 75% of traffic on the Ashburton Bridge is traffic travelling between Tinwald and the remainder of Ashburton.

The Seriousness and Urgency is assessed as "Medium" initially, rising to "High" by 2016.

3.2.3 Preferred Option: New Road Bridge (linking into Chalmers Avenue).

This option involves the construction of a new bridge southeast (downstream) of the existing bridge. From preliminary investigation, the potential route is via Walnut and Chalmers Avenues, connecting onto the new bridge, then through Tinwald. The exact location of the Tinwald link has not yet been determined. The new road could connect into either Carter's Terrace or Wilkin Street. In the long term, it may be feasible to bypass Tinwald altogether.

Locating the bridge to link Chalmers Avenue with Tinwald caters well for local traffic, which makes up 75% of existing bridge users.

Both Walnut and Chalmers Avenues are currently wide two lane roads with solid central medians. It is expected that both these roads will cope comfortably with the additional traffic using the route.

The intersections of Chalmers Avenue with Moore Street and with Walnut Avenue are currently single lane roundabouts. It is expected this arrangement will cope adequately with projected turning volumes without major modification.

The new bridge could be designed to provide improved access across the river for cyclists and pedestrians. The economics include cycle benefits from the generation of additional cycle trips due to the improved facilities.

Construction of an additional bridge over the Ashburton River would reduce congestion along the existing bridge, currently one of the most congested points within Ashburton's transportation network.

A second bridge will also provide route security. The presence of two bridges across the Ashburton River would increase the resilience of the local and regional transportation network in the event of one of the bridges being damaged or closed due to maintenance or an incident.

The expected estimate is $16M. The 95th percentile estimate is $20M. These costs include a two lane 350m long bridge, new link roads, upgrade of connecting roads, property purchase and professional fees. The estimate is based on the new link road connecting into Carter's Terrace or Wilkin Street, not bypassing Tinwald.

This is the preferred option.

The Effectiveness of the preferred option is assessed as "High".

3.2.4 Economic Analysis and Risk Assessment

3.2.4.1 Accident Analysis

When traffic volumes are close to the capacity of the road, there is a tendency for the numbers of minor (often nose to tail type) accidents to increase. The Ashburton River Bridge and adjacent sections of SH1 are predicted to be approaching capacity by 2026.

Transferring some of the traffic to an alternative route is therefore likely to reduce the numbers of minor accidents. However, it is also likely to result in increased average speeds on both the existing and new route. This may result in a smaller number of more serious accidents.

An alternative bridge which directs traffic into residential areas is likely to increase traffic volumes on residential streets. Much of the increased traffic on the residential street will be travelling through, and will have a tendency to travel at higher speeds. The combined effect of these two factors is likely to be an increase in accidents on the affected streets.

On this basis it is assessed that accident costs would remain similar for both the Do Minimum and the new bridge.

3.2.4.2 Economic Assessment

A preliminary economic analysis has been undertaken using the traffic volumes, speeds and intersection delays predicted by the Saturn model.

The predominant benefits gained by constructing the bridge will be day to day travel time savings. Duplicating the existing bridge will also significantly improve the network resilience should the SH1 bridge be closed or restricted for any reason. The benefits arising from the improved resilience have not been included in the economic analysis to date.

Using the Saturn model, the 2026 average speed along SH1, from Racecourse Road to the southern end of Tinwald, has been assessed as 33km/h. The preferred option would achieve higher speeds on both SH1 and the new route, due to the redistribution of traffic.

To undertake a preliminary analysis, journey time speeds of 44km/h on the existing route, and 48km/h on the new route were inputted. The resulting Benefit Cost Ratio (BCR) was greater than 5.

The travel time benefits, and consequently the BCR, are very sensitive to changes in traffic speeds. Increasing the do minimum speed to 37km/h reduces the BCR by half.

The economic calculations have not been included in this report. It is considered that the available data lacks sufficient detail to enable an accurate analysis to be undertaken

The economic efficiency is assessed as "Medium" initially, rising to "High" by 2026.

3.2.4.3 Risk Analysis

The main risks to be managed on the project and their possible effect on project costs and progress is summarised in order of significance in Table 3-2 below:

	Description	Potential Consequence
1	Unforeseen Land Purchase Issues	Increased Costs and Delay
2	Resource Consents	Increased Costs, Delays
3	Funding	Delay
4	Traffic Management During Construction	Safety, Increased Costs, Delay and Bad Publicity
5	Market Issues	Increased Costs
6	Timing of the Construction Phase	Increased Costs, Delay
7	Weather – Flood Event	Delay

Table 3-2 Risk Analysis Summary

3.2.5 Overview of Generic Assessment – LTMA

The options were assessed against the LTMA in the Options Identification Report. A summary is attached in Appendix A.

3.2.6 Services

Services will probably be affected by the proposed new bridge and connecting roads. However the final alignment has not yet been determined, so the exact extent of the service relocation/protection required is not able to be ascertained at this stage.

3.2.7 Land Requirements

For the new section of road adjacent to and along the bridge, it has been assumed that a 40m wide road reserve will be required, to allow for the carriageway and clear zones. There may be some widening required along the connecting streets. This equates to a total land requirement of 5 ha.

As the final route has not yet been determined, it is not possible to ascertain the number of landowners that may be affected. This will need to be confirmed during the I&R phase.

A preliminary estimate of the property costs was undertaken. The total expected cost of compensation was determined to be $315,000. This figure has been included in the estimate.

3.2.8 Resource Management Issues

Resource Consents and Building Consents would be required for the new bridge.

The Ashburton River is a Statutory Acknowledgement Area under the Ngai Tahu Settlement Claims Act.

A summary of the Resource Management issues is included in Appendix A.

3.2.9 Funding

A new bridge connecting Tinwald with Chalmers Avenue would be a local road project. As such, it would normally be funded by Ashburton District Council, with a subsidy available from LTNZ at the assistance rate in operation at the time of construction.

However, this project gives significant benefits to the State Highway. LTNZ's Programme and Funding Manual has provision for local road construction projects to be partly funded as State Highway projects where:

- Greater State Highway benefits can be purchased per dollar when compared to upgrading the State Highway;
- Transit New Zealand and the local authority, in consultation with Transfund, have agreed that the project is the best investment option;
- Transit New Zealand and the local authority, in consultation with Transfund, have agreed on attribution of benefits and construction costs;

- The project is unlikely to proceed if left to the local authority, ie funded at normal financial assistance rates[1].

3.2.10 Other Options Considered

3.2.10.1 New Road Bridge and Full Bypass

This option is a full bypass of Ashburton and Tinwald, with the construction of a new bridge across the Ashburton River. The final alignment of this option is yet to be determined.

3.2.10.2 Comparison of Preferred Option and Alternative Option

Table 3-3 below compares the predicted flows across the Ashburton River in 2026 for the existing arrangement with the flow for each option.

		AM Peak	Interpeak	PM Peak	AADT
SH1 Bridge	Do Minimum	2,600	2,200	3,400	36,000
	New Bridge via Chalmers	1,500	1,300	1,900	21,000
	Full Bypass	1,800	1,600	2,200	26,000
New Bridge	Do Minimum	-	-	-	-
	New Bridge via Chalmers	1,100	900	1,400	14,800
	Full Bypass	800	600	1,200	10,150
Total	Do Minimum	2,600	2,200	3,400	35,800
	New Bridge via Chalmers	2,600	2,200	3,400	35,800
	Full Bypass	2,600	2,200	3,400	35,800

Table 3-3 Comparison of Predicted Bridge Flows (2026)

Both options are predicted to result in significant reductions in traffic volumes on the existing Ashburton River Bridge, and on the sections of SH1 either side of the bridge. Both options are also expected to attract more local traffic than through traffic.

The full bypass is a much more direct, free flowing through route than the preferred option. However, the preferred option is more convenient for local traffic. Approximately 75% of the traffic on the existing bridge has its origin or destination in Tinwald. The preferred option is, therefore, expected to carry a larger total volume than a full bypass.

It is likely that an Ashburton Bypass will result in fewer vehicles stopping in Ashburton on their way through town. This is likely to have a negative impact on businesses, such as food businesses and service stations, which cater for through traffic.

3.2.10.3 Duplicating Existing Bridge

The capacity at the current location could be improved by constructing an additional two lane bridge alongside the existing bridge. However this would transfer the bottleneck that currently exists on the bridge to locations upstream and downstream of the bridge.

[1] Transfund (now LTNZ) Programme and Funding Manual – Section 7.1.2 – Note the funding structure has changed since the ATS report was prepared. However, a mechanism for obtaining additional funding for local road projects which benefit the State Highway network remains.

3.2.11 Conclusions and Recommendation

Construction of an additional bridge over the Ashburton River would reduce congestion along the existing bridge, currently one of the most congested points within Ashburton's transportation network. A second bridge will also provide route security for both the local and regional roading network.

The preferred option is to construct a new bridge southeast (downstream) of the existing bridge. From preliminary investigation, the potential route is via Walnut and Chalmers Avenues, connecting onto the new bridge, then to Tinwald.

It was recommended that the project proceeds to the scoping phase.

4 Ashburton Second Bridge Issues and Options Report (2010)

An Issues and Options report was prepared for Stage 1 of the investigation into a Second Bridge Across the Ashburton River (Opus Jan 2010).

This report considered thirteen options for a bridge location, and associated access roads. These options are described in section 4.1. The options were assessed against a range of fifty criteria. The criteria were agreed at a workshop of project team members. Notes from the workshop, including descriptions of the criteria are included in Appendix B. The criteria were arranged under the following headings:

- Access and Mobility;
- Land;
- Engineering – Technical;
- RMA;
- Policies, Plans and Strategies;
- Economics;
- Risks;
- Environmental Impacts; and
- Wider Outcomes.

Of these, Access and Mobility, Land, Engineering, and RMA were considered critical factors.

4.1 Options Considered

The following thirteen options were initially considered at the Ashburton Second Bridge Issues and Options stage. A drawing showing the options considered is included in Appendix E:

Option A – Eastern Bypass

- A complete bypass to the east of Ashburton, potentially utilising existing local roads between Chertsey and south of Tinwald;
- SH1 would relocate to new bypass;
- Existing SH1 would become local road.

Option B – Trevors Rd to East of Tinwald

- Connecting to Trevors Rd north of the Ashburton River, and partially or completely bypassing Tinwald on the south side, using a new road.

Option C – Leeston St to East of Tinwald

- Connecting to Leeston St, north of the Ashburton River, and partially or completely bypassing Tinwald on the south side, using a new road.

Option D – Chalmers Ave to East of Tinwald

- Connecting to Chalmers Ave, north of the Ashburton River, and partially or completely bypassing Tinwald on the south side, using a new road.

Option D - E – Chalmers Ave to Grove St

- Connecting to Chalmers Ave, north of the Ashburton River, and Grove St on the south side. Utilising existing roads on both sides. Bridge would be on slight skew across the river.

Option E – William St to Grove St

- Connecting to William St, north of the Ashburton River, and Grove St on the south side. Utilising existing roads on both sides.

Option F – Cass St to Thomson St

- Connecting to Cass St, north of the Ashburton River, and Thomson St on the south side. Utilising existing roads on both sides.

Option G – 4 Lane Existing Bridge

- Duplication of existing bridge immediately adjacent to its present location. Would include 4 laning of existing State Highway through Tinwald and Ashburton.

Option H – West St to Melcombe St (one way northbound – Existing bridge one way southbound)

- One way southbound from Moore St to a point in Tinwald, using the existing State Highway, including the existing bridge.
- One way northbound from a point in Tinwald to Moore St using Melcombe St, a new bridge north of the rail bridge, and a new road to Moore St.

Option H1 – West St to Melcombe St (Relocate SH1 to new bridge, existing SH bridge to become local road)

- SH1 to be relocated to new link from Moore St to a point in Tinwald via a new link between Moore St and the river, a new bridge, a new link to the end of Melcombe St, and Melcombe St
- A new State Highway level rail crossing. Drawing No 4 shows a possible location. Other location options could include the entire length of Melcombe St from south of the Carters Tce underpass to south of Tinwald.
- Existing SH1 and bridge between Moore St and linkage to new SH to become a local road.
- Existing SH1 rail crossing south of Moore St to be closed.

Option I – Park St to Tarbottons Rd

- Connecting to Park St, north of the Ashburton River, and Tarbottons Rd on the south side. Utilising existing roads on both sides.

Option J – Oak Grove to West of Tinwald

- Connecting to Oak Grove, north of the Ashburton River, and partially or completely bypassing Tinwald on the south side, using a new road.

Option K – Western Bypass

- A complete bypass to the west of Ashburton, potentially using new roads.
- SH1 would relocate to new bypass.
- Existing SH1 would become local road.

4.2 Option Assessment

The full assessments of each option are included in the tables in Appendix C. A "traffic light" display has been used to summarise the assessment of each criteria.

Indicates that the option has no significant issues, and makes a positive contribution towards meeting the criteria;

Indicates that the option has some issues which are able to be addressed, and makes little positive or negative contribution towards meeting the criteria; and

Indicates that the option has serious or fatal issues which are not able to be readily addressed, and makes a negative contribution towards meeting the criteria.

The results of the option assessment are shown on Table 4-1

Summary of Option Assessment

Option	Access and Mobility	Land	Engineering-Technical	RMA	Policies, Plans, Strategies	Economics	Risks	Environ Impacts	Wider Outcomes
A – Eastern Bypass									
B – Trevors Rd to East of Tinwald									
C – Leeston St to East of Tinwald									
D – Chalmers Ave to East of Tinwald									
D-E – Chalmers Ave to Grove St									
E – William St to Grove St									
F – Cass St to Thomson St									
G – 4 Lane Existing Bridge									
H – West St to Melcombe St (one way north & south)									
H1 – West st to Melcombe St (new SH1)									
I – Park St to Tarbottons Rd									
J – Oak Grove to West of Tinwald									
K – Western Bypass									

Table 4-1 Option Assessment Summary

The option assessment summary from the Issues and Options Report is reproduced below:

"*Only two options positively contributed to, or were neutral in regards to, all criteria. These were Options D, Chalmers Ave to East of Tinwald, and D-E, Chalmers Ave to Grove St.*

These options both provide good connectivity between Tinwald and Ashburton. They both connect to Chalmers Avenue on the north side. Chalmers Avenue is a wide high capacity road, with good links across Ashburton via Moore Street, Havelock Street, and Walnut Avenue.

Option D would connect to a new road on the south side of the river. This road could form the edge of the proposed Tinwald Residential zone.

Option D-E crosses the river at a slight angle, resulting in the bridge being 30m longer than the perpendicular options. This option connects to Grove Street on the south side of the river. Grove Street has a wide cross section, and currently carries small traffic volumes. It connects well to Tinwald and SH1 via a number of local roads.

Both options are expected to reduce the numbers of vehicles turning right from local Tinwald roads onto SH1."

5 Additional Investigations (2010)

Following receipt of Community feedback on those options, Council then commissioned further investigations in 2010. These additional investigations included the following:

- Social Impact Assessment (carried out by Taylor Baines and Associates);
- Formation, facilitation and support for a Community Reference Group (carried out by Taylor Baines and Associates); and
- Further detailed investigations of six options, including bypass options, options at the end of Chalmers Avenue, and options near the existing SH1 / railway corridor. The options considered are described in Section 5.1.

A multi criteria assessment was carried out on each option. The results of this assessment are included in Appendix H.

5.1 Options Considered

The following nine Options were evaluated in the Additional Investigations:

1. Outer Bypass (Fairton to Winslow)
2. Inner Bypass (Seafield Road to Laings Road)
3. Chalmers Avenue to East of Tinwald – Rural
4. Chalmers Avenue to East of Tinwald – Urban
5. Chalmers Avenue to Grove street
6. West Street to Melcombe Street (rail level crossing connection to SH1 south of Tinwald)
7. West Street to Melcombe Street (rail overpass connection to SH1 south of Tinwald)
8. Four laning of SH1
9. Tinwald Traffic Signals

The option of four laning State Highway 1 was added at the suggestion of the Community Reference Group, and for reasons of completeness, an assessment was also included for traffic signals in Tinwald. This is a short term option which may be pursued in parallel with the second bridge project.

Appendix F shows the location of all of the options. Appendix G includes more detailed drawings of each option individually.

Table 5-1 summarises the features of each option

Description/assumption	Bypass: Fairton-Winslow	Bypass: Seafield Road-Laings Road	Chalmers Ave-East of Tinwald - rural option	Chalmers Ave-East of Tinwald - urban option	Chalmers Ave-Grove Street	Melcombe Street: Rail level crossing	Melcombe Street: Rail overpass	SH1 4 Laning	Tinwald Traffic Signals
Status of new route	State Highway	Local Road	Local Arterial	Local Arterial	Local Arterial	State Highway	State Highway	State Highway	State Highway
Total length of new route	26km	9.3km	2.3km	2.3km	2.3km	7.1km	6.8km	4.4km	N/A
Total length of new road	12.6km	6.2km	2.1km	2.1km	0.6km	3.1km	2.8km	0	N/A
Total length of existing road upgraded	13.4km	3.1lm	0.2km	0.2km	1.7km	4.0	4.0	4.4km	N/A
Bridge Length	360m	360m	360m	360m	420m	360m	360m	360m	N/A
# of properties likely to be purchased	42	47	6	10	4	21	14	14	4
% of new road in current urban area	0%	~40%	0%	0%	~20%	~25%	~25%	0%	N/A
Additional distance for SH through traffic	~6km	~2.7km	~1.6km	~1.4km	~1.2km	0km	0km	0km	0km
Traffic speed environment	100kph	100kph - rural 50kph - urban	100kph rural - 50kph Urban -	50kph	50kph	100kph - rural 50kph - urban	100kph - rural 50kph - urban	50kph	50kph
Proportion of SH through traffic likely to use new route	Small	Small	Small	Small	Small	Majority	Majority	Majority	N/A
Proportion of traffic between south of Ashbtn and north east Ashburton likely to use new route	Small	Small / Moderate	Moderate	Moderate	Moderate	Significant	Significant	Majority	N/A
Proportion of local traffic (~70% of total bridge traffic) likely to use new route	Small	Small	Moderate	Significant	Significant	Moderate	Moderate	Majority	N/A
Traffic reduction on existing bridge	Small	Small	Moderate	Significant	Significant	Moderate	Moderate	Significant	N/A
Expected Total Project Cost	$69 - $84M	$48 - $58M	$27 - $32M	$30 - $35M	$25 - $30M	$36 - $43M	$38 - $46M	$41 - $51M	$1-2M
NZTA funding contribution likely	No	No	Possible	Possible	Possible	Unlikely	Unlikely	Unlikely	Likely
No of key transp Issues addressed	1	1	4	4	4	2	2	2	2

Table 5-1 Summary of Option Features

5.2 Option Assessment Methodology

The assessment methodology section from the Additional Investigations Report is reproduced in sections 5.2.1 to 5.2.11.

5.2.1 Social Impact Assessment

A Social Impact Assessment (SIA) has been produced by Taylor Baines and Associates. The SIA included data collection, (including document review, interviews with stakeholder groups), and inputs from the Community Reference Group. This information was then used to provide inputs into the Multi-criteria assessment of options from a Social Impact perspective.

5.2.2 Community Reference Group

A Community Reference Group was established and facilitated by Taylor Baines and Associates. Support and inputs were provided by Opus. Project team members from Opus attended Community Reference Group meetings to provide information and answer queries. The purpose of the Community Reference Group was to act as a sounding board for advice from the Tinwald and Ashburton community to the consultants carrying out additional assessment work on the 2nd bridge options, with particular attention to the scope of the assessment and the methods of consultation.

The Terms of Reference of the Community Reference Group are included as Appendix 3 of the Social Impact Assessment.

One key query arising from the Community Reference Group concerned the proportion of local traffic on the existing bridge[2].

The Community Reference Group provided inputs to the following stages of the additional option investigations:

- Factors they considered important to be considered in the option assessment;
- A "clean sheet" pros and cons assessment of each option based on the factors they considered important;
- Ranking of criteria suggested by the project team. This information was used to produce possible assessment weightings; and
- Comment on the 1st draft option assessment produced by the project team. Option scores and commentaries were amended as a result of these comments.

Reports to Council of the Community Reference Group meetings are included in Appendix 5 of the Social Impact Assessment.

5.2.3 Consideration of Feedback from Previous Consultation

Significant feedback was obtained as a result of the consultation following the completion of the Issues and Options Report. Issues raised in the consultation included:

- Effects on residents of Grove Street including:

[2] This, along with additional traffic surveys, is discussed in the ASUB Traffic Impact Assessment

  - Increase in traffic down residential street(s)
  - Heavy vehicles using bridge/route
  - Disturbance to residents
  - Noise
  - Increase in accidents (including children)
  - Effects on retirement home
  - Pollution
  - Reduction in property value

- Exit strategy onto State Highway?
- Consider options around the existing State highway / Melcombe Street
- Consider the need for a bypass rather than a local bridge.
- The effect of increased traffic on the Tinwald School.
- The need for a second bridge?
- Clarify the local traffic issue.
- Can traffic lights be put in first?
- The need to think long term and have the best solution for the future.
- Funding options from NZTA.

This feedback was further considered in the Social Impact Assessment, along with feedback from face to face interviews and meetings with key stakeholders.

The issues raised in the feedback were also incorporated into the comparative option assessment process, and addressed in the relevant sections of this report.

5.2.4 Geotechnical Study

Further desk top geotechnical investigations were carried out. These involved discussions with Opus and Ashburton Contracting staff who have been involved in excavations in the Tinwald area in recent years (including pipeline replacements, bore drilling and local and state highway roadworks), and a review of available literature. These investigations confirmed the assumptions which had been made regarding ground conditions during the Issues and Options phase of this project. The cost of carrying out specific on site geotechnical testing for each of the options being considered was not considered justified at this stage of the project. The risks associated with this approach have been considered in the preparation of the range of cost estimates for each option. The findings of the geotechnical investigations are included in Appendix D

5.2.5 Discussions with NZTA

Meetings have been held with Christchurch based NZTA staff. These meetings have covered the following issues:

- Appropriate design standards for new sections of road which will become State Highway 1
- Likelihood of obtaining NZTA funding to ADC's standard subsidy rate for each option;

- Likelihood of obtaining further financial assistance over and above ADC's standard subsidy for each option; and
- An informal opinion on the viability of each option

These informal discussions indicate the following:

- NZTA continues to stand by the strategy developed as a result of the Ashburton Transportation Study. A key part of that strategy was a 2nd bridge linking Eastern Tinwald with Chalmers Avenue. They feel that this route provides a good route between Tinwald and the rest of Ashburton, and makes good use of existing underutilised existing infrastructure (particularly Chalmers and Walnut Avenues);
- NZTA locally would be likely to support an application for funding of ADC's 57% funding subsidy for such a route, subject to project viability and funding availability at the time;
- NZTA may also be open to additional funding beyond ADC's subsidy to account for SH1 betterment resulting from one of these options proceeding. This would be subject to the same project viability and funding availability constraints above, and to reaching agreement on the value of any State Highway betterment;
- NZTA locally would be unlikely to support an application for funding for the bypass, Melcombe Street, or SH1 four laning options. They consider that these options are typically more expensive, and do not address the issues facing the existing network as effectively as the Chalmers Avenue options do; and
- NZTA consider that the standards adopted for the concept design and cost estimates for State Highway options considered in this report are likely to be no more than the minimum that NZTA would be prepared to accept. In fact they would prefer, and may insist on higher standards should a State Highway option proceed.

5.2.6 Preliminary Design

A concept design was prepared for each of the options. This consisted of a plan, indicating option alignment overlaid over property boundary drawings for the two bypass options, and over aerial photographs for all other options. Vertical design was carried out using Civil3D design software based on LIDAR levels provided by ADC. This enabled appropriate design gradients to be confirmed, depth and quantities of cut and fill, and extents of land required for cut and fill batters to be estimated. Option Concept Plan Drawings are included as Appendix G (bound separately). The specifics of each design are discussed in Section 5.1.

5.2.7 Cost Estimates

Rough Order of Cost estimates were prepared for each option based on the preliminary designs and the available geotechnical information. The cost estimates show a range of costs for each option. This range reflects a degree of uncertainty around some of the detail of each option, particularly regarding detailed design and ground conditions. Contingencies have been included for these uncertainties.

The level of confidence in the cost estimates is +/- 20%, which is reflected in the range of costs for each option.

More detailed cost estimates will not be possible until detailed design is complete.

5.2.8 Traffic Modelling

Traffic modelling was carried out for 2016 and 2026 traffic conditions as part of the Ashburton Transportation Study. The options modelled at that stage were a "Do Minimum" option (i.e. no change to the existing roading system), a bypass option from a point on SH1 south of Northpark Road to a point south of Fords Road, and an option linking Chalmers Avenue to east of Tinwald. Growth projections based on the Ashburton Development Plan were used for the 2016 and 2026 year models.

As part of the additional investigations, additional modelling was carried out to update the Chalmers Avenue to east of Tinwald option to reflect the changes in proposed development of east Tinwald in the District Plan Review when compared with the Ashburton Development Plan.

The following assumptions have been made regarding traffic volumes:

- That traffic volumes carried by both the inner and outer bypass options considered in these additional investigations would be significantly less than those estimated for the short high speed bypass modelled.
- That the "do minimum" traffic volumes on SH1 would remain the same for the 4 laning option, and be split close to 50/50 between Melcombe Street and Archibald Street for the Melcombe Street options.

5.2.9 Option Assessment Process

Each of the options was assessed against a number of criteria. The criteria were identified, and a preliminary assessment carried out at a full day workshop by project team members from Opus, Taylor Baines and Associates, and ADC. This preliminary assessment was presented to the Community Reference Group. Their comments were considered, and modifications were made to the assessment as appropriate. The final assessment is included as Appendix H (bound separately) and summarised in section 5.3.5.

5.2.10 Prioritisation of Transportation Study Projects

The Transportation Study included a suite of projects to address the transportation issues in Ashburton, including:

- Provide Traffic Signals in Tinwald;
- Four lane SH1 between Havelock Street and Moore Street;
- Revise Dobson Street / Kermode Street / SH1 intersection;
- Provide a second bridge across the Ashburton River;
- Upgrade Walnut Avenue / SH1 / East Street intersections;
- Provide safe pedestrian and cycle routes to schools;
- Improve pedestrian and cycle access across the Ashburton River.

These projects have been considered in conjunction with each of the second bridge options to identify any synergies between the second bridge options and the Transportation Study projects.

5.2.11 Tinwald School

Impacts on Tinwald School have been assessed for options which change the roading network or traffic patterns in the vicinity of Tinwald School, particularly on Graham Street. Impacts on other schools have also been assessed for options which change the roading network or traffic patterns in the vicinity of those schools.

5.3 Option Assessment

The Option assessment process consisted of five distinct phases, namely:

- Development of Assessment Criteria
- Ranking of criteria by the Community Reference Group (CRG) and development and application of weightings based on CRG ranking
- Initial assessment and scoring against Criteria
- Review and comments from the CRG
- Revised assessment and scoring

Each of these phases is described in sections 5.3.1 to 5.3.5.

5.3.1 Assessment Criteria

The assessment criteria used in the multi criteria assessment were developed at a full day workshop attended by project team members from ADC, Taylor Baines and Associates and Opus. Table 5-2 shows the criteria used in the assessment.

Criteria	*Exemplified by*
Safety	Pedestrian, cyclist and motorist safety.
Personal Security	Safety of people in public places by ensuring public places are well lit and able to be observed by nearby residents and or passers-by. In this context, 'public places' refer to the public road reserves and adjacent places where members of the public are entitled to be (as in "Crime Prevention Through Environmental Design" (CPTED))
Emergency Services	Ability of emergency services to respond quickly to emergencies in all parts of the district, but with a particular emphasis on urban areas where events are more common. Influenced by distance of travel, number of intersections to cross and traffic density
Lifeline	The bridge carries utilities (water supply, electricity, telecommunications) across the river. Ability to maintain essential utilities to communities in the event of a civil defence emergency (flood, earthquake etc). Most effectively achieved through duplication.
Route Security	Ability to provide reasonable access in the event of a local incident (breakdown, accident etc), or major emergency (natural hazard) closing the existing bridge or approach
Accessibility	Ability to get to key destinations within town, including homes, employment, education, medical, recreation, and shopping. Includes walking, cycling, private motor vehicle, public transport, freight. Often a particular issue at peak times.
Community Severance	The splitting of sectors of a community by a physical & perceived barrier (includes road & traffic). At town level & street level.
Active Transport	Promoting active transport (e.g. walking and cycling as means of travel to school and workplaces) by improving and extending walking and cycling infrastructure, and improving environmental conditions for walking and cycling (i.e. a safer, more pleasant environment with good quality surfaces); often involves increasing the separation between vehicular traffic routes (particularly those involving heavy vehicles) and pedestrian/cyclist routes.
Land	Ease of land acquisition. Number of properties requiring partial or full acquisition. Houses and other buildings requiring demolition. Dislocation of property owners

Heritage	Impact on heritage sites, buildings etc & archaeology.
Environment – Water	Impact on water quality, and river hydraulics.
Amenity & Public Health	Changes to amenity values, e.g. noise levels, air quality, vibration, visual effects and streetscape. In severe cases has impacts on personal health.
Cost	Total cost - Land & construction. Whole of life cost. Local ratepayer share.
Economic Development	Impact on local businesses operating in Ashburton and Tinwald. Cost to users, including freight operators (including flow on effects).
Planning for the Long Term	Addressing short, medium, and long term transportation issues throughout the next 50 years.
Sewer Replacement Opportunity	Existing sewer siphon under Ashburton River near the oxidation ponds is likely to need replacement in the medium to long term. A new bridge may provide a viable route for the sewer, and thereby reduce some of the costs of sewer replacement.

Table 5-2 Assessment Criteria

5.3.2 Ranking and Weighting of Criteria

A separate exercise was held at the third CRG meeting (14th October 2010), to identify and rank assessment criteria.

Using a process of:

a) Initial, individual, silent brainstorming

b) Collating everyone's suggested criteria (without repetition) on the whiteboard, and

c) A simple two-step voting procedure, answering two questions:

1. What criteria do you think should be considered in assessing the options for a second bridge?

2. Which of the listed criteria do you think are most important to you?

Table 5-3 shows the criteria ranking produced by the CRG through the above process

Criterion	Votes
Likelihood of NZTA $ contribution	9
Benefits to overall traffic flows - in/out/around town	9
Route security - having an alternative route	9
Long-term thinking	9
Cost to ratepayers (total)	8
Safety of people	7
Impact on the property values of landowners living near the route	7
Cost effectiveness - cost in relation to value	7
Noise pollution in suburban areas	5
Accessibility	5
Route distances for freight through town for 'local' traffic	3
Severance - east from west	3

Separating cars/pedestrians off freight routes	3
Exhaust pollution	2
Geo-tech suitability for construction	2
Route distance for freight through town for inter-district traffic	1
Impact on customer numbers for local businesses	0

Table 5-3 CRG Criteria Ranking

Based on the criteria rankings produced by the CRG, weightings were developed for each criterion. The version 1 weightings reflect the importance placed on each of the criteria by the Reference Group, with weightings from 1 to 3, with 0.5 increments. Weighting Version 2 is a simplified version of Version 1. It only uses two weightings (1 or 2), compared to the five weightings in Version 1. This results in less distinction between the weightings applied to the assessment.

Table 5-4 lists the weightings used under both versions 1 and 2

	Weighting Version	
	1	**2**
Safety	2.5	2
Personal Security	1	1
Emergency Services	1.5	1
Lifeline	1	1
Route Security	2	2
Accessibility	2	2
Community Severance	1	1
Active Transport	1	1
Land	2	2
Heritage	1	1
Environment - Water	1	1
Amenity & Public Health	2	2
Cost	3	2
Economic Development	2	2
Planning for the Long Term	2	2
Sewer Replacement Opportunity	1	1

Table 5-4 Criteria Weightings

5.3.3 Initial Assessment and Scoring

Each of the options were assessed and scored against the criteria by the project team. Each option was given a score between -2 to +2 for each criteria where:

- -2 indicates the option has significant negative impact
- -1 indicates the option has moderate negative impact
- 0 indicates the option has little or no impact
- +1 indicates the option has moderate positive impact

- +2 indicates the option has significant positive impact.

The team's reasoning for each score was also noted.

5.3.4 CRG Review

The project team's preliminary assessment was presented to the CRG for review and comment. A total of 24 scores were changed as a result of the CRG inputs.

5.3.5 Revised Option Assessment

Table 5-5 shows the final raw and weighted scores for each option considered

Summary of Option Assessment - Feb 2011

	Social									Cultural	Enviro		Economic						
Weighting Version 1	2.5	1	1.5	1	2	2	1	1	2	1	1	2	3	2	2	1			
Weighting Version 2	2	1	1	1	2	2	1	1	2	1	1	2	2	2	2	1			
Option	Safety	Personal Security	Emergency Services	Lifeline	Route Security	Accessibility	Community Severance	Active Transport	Land	Heritage	Environment - Water	Amenity & Public Health	Cost	Economic Development	Planning for the Long Term	Sewer Replacement Opportunity	Raw Total	Weighted - V1	Weighted - V2
Outer Bypass	0	0	0	0	2	0	0	1	-2	0	0	0	-2	0	0	1	0	-4	-2
Inner Bypass	0	0	0	1	2	0	0	1	-2	0	0	-1	-2	0	0	1	0	-5	-3
Chalmers - Rural	1	0	1	2	2	2	1	1	0	0	0	-1	1	1	2	0	13	23	21
Chalmers - Urban	2	1	1	2	2	2	1	2	-1	0	0	-1	1	1	2	0	15	26	23
Chalmers - Grove	1	2	1	2	2	2	-1	1	0	0	0	-2	1	1	1	0	11	19	17
Melcombe - level xing	0	0	1	1	1	1	-1	1	-2	0	0	-2	-1	-1	0	0	-2	-7	-6
Melcombe - Rail overpass	1	0	1	1	1	1	-1	1	-1	0	0	-2	-1	-1	0	0	0	-2	-2
4-laning SH1	0	-1	1	0	1	-2	-2	1	-1	-1	0	-1	-1	-2	0	0	-8	-15	-14
Traffic Signals in Tinwald	1	0	0	0	0	1	1	1	0	0	0	0	2	0	0	0	6	13	10

Table 5-5 Option Assessment Scores

The three Chalmers Avenue options all produced positive raw and weighted scores. The urban option scored highest of the three Chalmers Avenue options with the Grove Street option scoring lowest.

The Tinwald Traffic Signals was the only other option to produce a positive score.

The differences between the options were further pronounced following application of the weightings.

5.3.6 Iwi Inputs

Members of the project team met with representatives of Te Rūnanga O Arowhenua at the Arowhenua Marae on 17th November, 2009. The full range of options being considered for the Issues and Options Report were presented. The representatives of Te Rūnanga O Arowhenua

indicated that they had no concerns with any of the options. During the remainder of the assessment process all options were treated as having similar, limited, impacts on Iwi.

A further meeting was held with representatives of Te Rūnanga O Arowhenuaon 30 October 2012. Council provided the representatives with information relating to the bridge project and sought comment. The representatives advised that they had no issues with the project at this time. They expressed an interest in becoming involved once a preferred site has been chosen and the project progresses through to the statutory process phase.

5.4 Final Option Assessment

Following consultation on the Additional Investigation results, Council decided to proceed to designation on an alignment along the Chalmers Avenue to East of Tinwald – Urban route. Further investigations were carried out on two sub options of that route, namely a curvilinear alignment, avoiding as many houses and other buildings as possible, and running more or less adjacent to property boundaries (sub option A), and a "straight line" option, running along property boundaries, and along a length of Wilkins Road, with Tee intersections on Wilkins Road (sub option B). These two options are shown on Figure 5-1 and Figure 5-2 respectively:

Figure 5-1 Chalmers Ave to East of Tinwald - Urban Sub Option A

Figure 5-2 Chalmers Ave to East of Tinwald - Urban Sub Option B

Sub option B resulted in traffic on the new principal road route needing to make right angle right and left hand turns, and giving way to traffic on the local road.

Council decided to proceed to designation on sub option A.

Opus International Consultants Ltd
20 Moorhouse Avenue
PO Box 1482, Christchurch Mail Centre,
Christchurch 8140
New Zealand

t: +64 3 363 5400
f: +64 3 365 7858
w: www.opus.co.nz

	Option 1. Signalise Agnes/Lagmhor/SH1 Intersection	Option 2. Remove Parking on SH1	Option 3. Revise Dobson St/Kermode St and Kermode St/SH1 Intersections	Option 4. New Bridge Over Ashburton River	Option 5. Safe Cycle and Pedestrian Routes to School	Option 6. Improve Cycle and Pedestrian Access Across River
Access and Mobility	**High:** Will improve access to the side roads at the intersection and also improve access to side roads and properties down stream of the signalised intersection by creating gaps in the traffic.	**Medium:** Will increase mobility for traffic flowing through Ashburton but will decrease access to properties, businesses and car park.	**Medium:** Increased access for Dobson Street West and potentially to the Riverside Industrial Area. Negative impact to Kermode Street and Dobson Street West businesses.	**High:** Significant improvements to access and mobility for local traffic. Reduction in traffic volumes on SH will benefit through traffic.	**High:** Improved access to schools, botanical gardens and hospital, particularly for those without cars or with disabilities.	**High:** Improved connectivity and accessibility between Ashburton and Tinwald.
Public Health, Safety and Personal Security	**High:** Improved motorist and pedestrian safety at the intersection.	**Low:** May increase pedestrian accidents and make the walking environment less attractive.	**Medium:** Increased driver safety at intersection but unlikely to improve safety for pedestrians.	**Medium:** Potential to improve the safety of pedestrians and cyclists over the bridge. Reduction in accidents on SH. However may increase accidents on residential streets due to increased volumes of traffic. Possible negative health impacts from increased heavy vehicles on residential streets.	**High:** Improved safety for pedestrians and cyclists. May reduce numbers using private vehicles, leading to health benefits and reduced emissions.	**Medium:** Change in safety depends on how well lit new path is and whether it is visible from the road. Increased numbers of trips by active mode will gain health benefits.
Economic Development	**Medium:** Improved access to side road and businesses adjacent to highway. Disbenefits to vehicles travelling along the highway.	**Medium:** Will improve operation of the highway. Will have a negative impact on businesses along the highway by lowering the levels of accessibility.	**Medium:** Improved access to Dobson Street West and Riverside industrial area. Negative impact caused by restricting movements into Kermode.	**High:** Improved travel time consistency and network security due to additional bridge. Improved accessibility for motorists travelling to origins and destinations outside of Ashburton.	**Medium:** Improved access to educational, recreational and health facilities. Signalisation will cause delays to through traffic.	**High:** Improved access to employment opportunities through increased accessibility and reliability of the route.
Regional Plan	Any changes to current stormwater disposal may trigger resource consent requirements.			Resource consent would be required for a new bridge. Disposal of stormwater will need to be considered in design.		
District Plan	Open Space zoning Designation not required.	Open Space zoning	3 heritage and notable trees along Park St and 1 along Moore St Designation may be required.	Designation will be required.	Any designation requirement(s) would need to be determined when proposal(s) developed.	Any designation requirement(s) would need to be determined when proposal(s) developed.
Landscape			If the Dobson St West /Kermode St intersection is closed there is the potential to improve the visual amenity of the area with landscaping	A second bridge is likely to have visual and landscape impacts on the river vista.		
Archaeological Cultural/Heritage		Heritage buildings adjacent to the SH.	3 heritage and notable trees along Park St and 1 along Moore St.	Ashburton River is a Statutory Acknowledgement Area under the Ngai Tahu Settlement Claims Act.	There are a number of heritage buildings and notable trees in the town that would need to be considered depending on the proposal	Ashburton River is a Statutory Acknowledgement Area under the Ngai Tahu Settlement Claims Act.

	Option 1. Signalise Agnes/Lagmhor/SH1 Intersection	Option 2. Remove Parking on SH1	Option 3. Revise Dobson St/Kermode St and Kermode St/SH1 Intersections	Option 4. New Bridge Over Ashburton River	Option 5. Safe Cycle and Pedestrian Routes to School	Option 6. Improve Cycle and Pedestrian Access Across River
Historic & Cultural Heritage Risk Model	Low sensitivity	Low sensitivity	Low sensitivity	Low sensitivity	Low sensitivity	Low sensitivity
Climate Change	No significant effects. Slight increase in emissions, may also lead to redistribution of emissions.	No significant change. Increase in greenhouse gas emissions from a reduction in share of trips by active modes but a reduction will occur due to improvements to congestion levels.	Little change in trip mode choice so minor change in energy efficiency and emissions.		Will encourage a mode change away from private motor vehicles to active modes, reducing emissions.	Will encourage a mode change away from private motor vehicles to active modes, reducing emissions.
Drainage Issues	Minor effects	Minor effects	Minor effects		Minor effects	Minor effects
Ecological Issues		No significant sites identified in area.	Heritage and notable tree to consider	Ashburton River is one of the most significant braided rivers in Canterbury for birdlife.	No significant sites identified in area.	No significant sites identified in area.
Traffic Noise	Unlikely to alter significantly.	Will decrease average noise per vehicle but will be met by an increase in traffic.	Change to noise is likely to be neutral.	Increase in traffic on residential streets will lead in increased traffic noise.	Will encourage a mode change away from private motor vehicles to active modes, reducing traffic noise.	Will encourage a mode change away from private motor vehicles to active modes, reducing traffic noise.
Air Emissions during Construction	Unlikely to be more than minor.	Unlikely to be more than minor.	Unlikely to be more than minor.		Unlikely to be more than minor.	Unlikely to be more than minor.
Property Requirements	No land is required.	No land is required.	Land may be required.	Land required from multiple landowners.	Land unlikely to be required	Land unlikely to be required

2nd Bridge Across the Ashburton River – Contract No. C554

Notes from the Criteria Identification Workshop

9th October 2009

Purpose of Workshop: To agree the criteria for the assessment of the proposed options and agree on the options to be considered.

Site Selection Criteria

Criteria	Brainstorm notes
* Access & mobility	Personal safety/security Mobility (scooters) Relationships between existing & future infrastructure and facilities Movement of people around town Location with respect to local roads Connectivity Relationship to SH1 Access (the ability to readily get to facilities in town, such as employment, education, recreation, and shopping facilitie) Pedestrians/cyclists Existing walkways/access along river Transportation links Linkages with key facilities ONTRACK Severance Existing bridge Geometrics/tie in impacts/considerations
* Land acquisition & access to land	
* Engineering – technical & constructability	Constructability Road safety Life expectancy of new bridge Engineering considerations – river hydraulics, geotech, structure etc River hydrology Bridge form Secondary purposes: utility services etc Geometrics
Relationship with State Highway 1	
Separation of traffic	
Ashburton Transportation study	

Policy	Justification District: LTCCP Regional: RLTS, RLTP National: LTMA, NLTP Transport priorities CTRIP
Compliance with ADC policy/plans	eg. Town Centre, Development Plan, Walking and Cycling Strategy, Parking Strategy, District Plan, Transportation Strategy
Funding	Acceptability to the funders (NZTA) Access to funding
Economics	
Other local proposals	Eg., Business Estate, Art Gallery
Cost	Benefit/cost Affordability Economics Economic contribution
Site specific costs or mitigation	
Natural hazards	
Risks	Natural hazards Inability to access funding Remaining life of existing bridge
* RMA considerations	Consentability Existing District Plan Public / Community support
Environmental considerations/impacts	Impacts on residents Noise Vibration Disturbance Visual impact – amenity Ecological impact Fitting in with surrounding environment Water quality (discharge from bridge) Land impacts, lifestyle blocks
Wider benefits/disbenefits	Community outcomes Social Public health Contribution to national good Increasing service life of existing bridge

* key criteria

Givens (for the purposes of this report)

- Existing State Highway bridge stays

Options

Chalmers Ave bridge

- Separation between bridges ie. Separates local & SH traffic to an extent
- Development Plan links
- Growth area – especially on Tinwald side
- Green space
- Linkages: Tinwald, Lake hood, meat works, Silver Fern Farms, Business Estate, possible Stadium site, heavy vehicle bypass, Chalmers Ave has adequate width to be 4 lanes
- Possible Developer contributions given where residential subdivision proposed

Full bypass of town on downstream (east) side

- SH would become local road
- Removed from local area
- Cost
- More green fields
- Local business impacts
- Long term view

Upstream (of existing bridge) variations

Around existing bridge - next to, clip on

One way pair – Existing bridge southbound, new northbound bridge upstream of rail bridge, and linking to West St (SH1) at Moore St (SH77), and to Melcombe St

Variations on Chalmers Ave – linking to Cass St, Oxford St, or Trevors Road

Option Assessment

- Option assessment shall be presented using “traffic light” approach as per the Stadium selection project.

ASHBURTON 2nd BRIDGE

OPTION ASSESSMENT

January 2010

Introduction

A preliminary assessment of twelve options for bridge locations across the Ashburton River was carried out. These options are shown on drawing number 6/619/114/1604, Sheet 1.

The assessment considered the location of the bridge, and associated route approaches for each option. Fifty criteria were identified and agreed at a workshop on 9th October 2009, and were categorised under the following factor headings:

- Access and Mobility;
- Land (acquisition and access);
- Engineering – Technical;
- RMA;
- Policies, Plans and Strategies;
- Economics;
- Risks;
- Environmental Impacts; and
- Wider Outcomes.

Of these, Access and Mobility, Land (acquisition and access), Engineering, and RMA were considered critical factors.

The assessments of each option are summarised in the tables following. A “traffic light” display has been used to summarise the assessment of each criteria.

Indicates that the option has no significant issues, and makes a positive contribution towards meeting the criteria,

Indicates that the option has some issues which are able to be addressed, and makes little positive or negative contribution towards meeting the criteria; and

Indicates that the option has serious or fatal issues which are not able to be readily addressed, and makes a negative contribution towards meeting the criteria.

Summary of Option Assessment

Option	Access and Mobility	Land	Engineering-Technical	RMA	Policies, Plans, Strategies	Economics	Risks	Environ Impacts	Wider Outcomes
A – Eastern Bypass									
B – Trevors Rd to East of Tinwald									
C – Leeston St to East of Tinwald									
D – Chalmers Ave to East of Tinwald									
D-E – Chalmers Ave to Grove St									
E – William St to Grove St									
F – Cass St to Thomson St									
G – 4 Lane Existing Bridge									
H – West St to Melcombe St (one way north & south)									
H1 – West st to Melcombe St (new SH1)									
I – Park St to Tarbottons Rd									
J – Oak Grove to West of Tinwald									
K – Western Bypass									

			Option A – Eastern Bypass		
			Criteria	***Assessment***	***Notes***
Critical Factors	***Access and Mobility***		Personal Safety/Security (considers the extent to which personal safety and security [particularly of pedestrians and cyclists] is able to be enhanced through measures such as public surveillance).	Moderate Personal Safety / Security	Route is outside of town and provides limited opportunity for observation. However distance from town makes it unlikely to be used by pedestrians or cyclists, therefore lack of observation not a major issue
			Mobility (considers the ability of motor vehicles, pedestrians and cyclists to move about the transportation network).	Provides good mobility for SH through traffic. Provides small improvement in mobility for local traffic	Modelling carried out for Transportation Study indicates 25% reduction in traffic on existing SH1 route. Therefore little change in mobility for local traffic
			Relationship to existing and future infrastructure and facilities.	Poor relationship to existing facilities in town	
			Connectivity	Poor connectivity within town	
			Access especially to key destinations.	Provides little access to destinations within town	
			Pedestrian and Cyclist, including access along river.	Unlikely to be used by pedestrians and cyclists	High speed road remote from town. Some SH traffic likely to divert to new route. Small improvement to pedestrian & cycle environment on existing bridge
			Severance	Slight reduction in severance within town. Additional severance within rural areas	Assumes bypass largely follows existing local roads. Reduction in traffic on existing SH1 will reduce severance effects within town
			Route Security	Good route security	Will provide viable alternative route should SH1 be unavailable
	Land		Land Acquisition and access	Route will require some private rural land to accommodate intersection upgrades and curve realignments	Assumes bypass largely follows existing local roads
	Engineering- Technical		Road Safety	Safe environment for SH1 through traffic using bypass. Small improvement on existing SH1 route	Well designed new alignment will provide safe environment for SH1 through traffic. Small reduction in traffic on existing SH1 route will result in small improvement in safety on that route
			Relationship with State Highways	Route will become new SH1	Assumes good linkages at either end, and that proposal acceptable to NZTA
			Relationship with local roads	Will connect with few local roads	
			Relationship with Railway	Potential to avoid SH1 railway crossing at Chertsey and in Ashburton	Assumes links to SH1 north of Chertsey rail crossing
			Separation of State Highway and Local traffic	Removes some SH1 through traffic from local network	
			Geotech	No Geotechnical constraints identified at this time	
			Bridge Structure	No structural constraints identified at this time	
			Secondary Purposes (Utility services etc)	Limited ability to carry local utilities	Does not link to local services
			Constructability	No constructability constraints identified at this time	
	RMA		Consentability	Upgrade of entire route will likely require stormwater discharge consent Bridge construction will require full range of consents from Environment Canterbury (RMA s.9, s.13, s.14, s15)	Will require: Aquatic ecology assessment; Terrestrial ecology assessment; River hydraulics / waterway capacity; Groundwater risk report.
			District Plan	All local roads used for route deemed to be designated in the District Plan. Bridge crossing location, and connection across Greenfields will need to be designated	Will require: Traffic impact analysis Cultural impact assessment Landscape assessment (bridge location)

			Option A – Eastern Bypass (contd)		
			Criteria	***Assessment***	***Notes***
Critical Factors	***Policies, Plans, Strategies***		District - Ashburton Transportation Study	Inconsistent with Study recommendations	Route to east of town not recommended in study
			LTCCP	Not inconsistent with Plan	
			Ashburton District Development Plan	Inconsistent with Development Plan	Does not provide linkages to areas of development in Plan
			Ashburton Town Centre Plan	Inconsistent with Plan	Likely to result in businesses wishing to relocate to near to bypass
			Ashburton Walking and Cycling Strategy	Not inconsistent with Strategy	
			Ashburton Parking Strategy	Not inconsistent with Strategy	
			Regional - RLTS	Inconsistent with Strategy	Strategy does not consider a full bypass of Ashburton
			RLTP	Not inconsistent with Programme	
			CTRIP	Inconsistent with Plan	CTRIP does not consider a full bypass of Ashburton
			National - LTMA,	Not inconsistent with Act	
			NLTP	Not inconsistent with Plan	
	Economics		Cost	High cost	Based on cost of upgrading existing roads to SH standards. (It would be difficult to justify lower standards for a local road carrying mainly SH traffic).Cost of constructing new roads including extensive land purchase would be higher.
			Economic Assessment – Benefit / Cost	Low Benefit Cost (Higher cost and smaller benefit)	Small number of users results in small user benefits
			Assist Economic Development	Little overall economic contribution	Some economic benefits for SH1 users. However, removal of through traffic likely to have negative impacts on Ashburton businesses
			Funding	NZTA funding unlikely	High cost and smaller BCR
			Integration with other local projects	Little integration	Does not relate to local projects at all
			Use of existing infrastructure	Minimal use of existing infrastructure	May be able to us existing local road alignments. However, likely to require extensive reconstruction to bring to SH standards
	Risks		Natural Hazards	No natural hazards identified at this time	
			Funding	NZTA funding unlikely	Refer note under Economics
			Existing Bridge	Little risk to bridge identified at this time	
	Environmental Impacts		Impacts on Residents (Noise, vibration, disturbance)	Moderate Impact	Will change low volume rural roads into a national State Highway. Significant impact on a small number of residents
			Visual Impact – South Approach	Moderate impact	Impact of change from low volume rural roads to national State Highway
			Visual Impact – River Crossing	Moderate Impact	Will have impact on Riparian margins on both sides of river. Visible to small numbers of people
			Visual Impact – North Approach	Moderate Impact	Impact of change from low volume rural roads to national State Highway
			Consistency with surrounding environment	Major impact	New SH not consistent with surroundings
			Water Quality (discharge from bridge)	Minor impact	Small discharge from bridge
			Land Impacts	Moderate impact	Impact on land surrounding new SH
	Wider Outcomes		Community Outcomes	Provides few community benefits	Small reduction in traffic on existing SH1
			Social	Limits linkages within Ashburton	
			Public Health (considers air pollution impacts, and impacts of increased active modes such as walking and cycling).	Neutral	Small benefits in reduction in air pollution in town. Small reduction in traffic on existing bridge may encourage some walking and cycling

			Option B – Trevors Rd to East of Tinwald		
			Criteria	***Assessment***	***Notes***
Critical Factors	***Access and Mobility***		Personal Safety/Security (considers the extent to which personal safety and security [particularly of pedestrians and cyclists] is able to be enhanced through measures such as public surveillance).	Moderate Personal Safety / Security	Route is outside of town and provides limited opportunity for observation on South side. It is on the current edge of town on North side. However distance from town makes it unlikely to be used by many pedestrians or cyclists
			Mobility (considers the ability of motor vehicles, pedestrians and cyclists to move about the transportation network).	Moderate mobility for SH through traffic, and for local traffic	Trevors Rd is urban on one side (kerb & channel on residential frontages), rural on the other (no kerb & channel on rural frontages). Good mobility across town on Beach St / Moore St, Wakanui Rd / Victoria Ave, and Albert St / Walnut Ave. Restricted mobility on other local streets
			Relationship to existing and future infrastructure and facilities	Uses existing infrastructure on North side. Does not relate with existing infrastructure on South side	Trevors Road likely to need upgrade
			Connectivity	Little connectivity	On extreme edge of town. Does not connect town well
			Access especially to key destinations	Little access to destinations in town	
			Pedestrian and Cyclist, including access along river	Little access for pedestrians and cyclists to destinations in town	Not likely to be desirable route for pedestrians and cyclists due to distance from town. Can link to Ashburton Walkway across town
			Severance	Route causes little severance. However does not address existing severance issues of SH1	Likely to result in little traffic reduction on SH1 traffic
			Route Security	Good route security	Will provide viable alternative route should SH1 be unavailable
	Land		Land Acquisition and access	Privately owned rural land would be required on the South approaches	
	Engineering- Technical		Road Safety	Little impact on road safety	Small increase in traffic numbers and associated accidents likely on Trevors Rd. Small reduction likely on SH1. Small reduction in vehicles turning right onto SH1 from Tinwald results in small reduction in accidents
			Relationship with State Highways	Poor linkages with SH1 on North side. Costly to provide linkages on South side	
			Relationship with local roads	Poor connection to local roads on South side. Linkages to low volume local roads on North side	Trevors Road is currently a semi rural local road. It is likely to become an urban road as development occurs on the eastern side
			Relationship with Railway	Likely to result in little change in traffic volumes at existing rail crossings	
			Separation of State Highway and Local traffic	Likely to result in little change in composition of SH traffic	
			Geotech	No Geotechnical constraints identified at this time	
			Bridge Structure	No structural constraints identified at this time	
			Secondary Purposes (Utility services etc)	Little connection to services on South side	
			Constructability	No constructability issues identified at this time	
	RMA		Consentability	All bridge and new road construction will require full range of consents from Environment Canterbury (RMA s.9, s.13, s.14, s15)	Will require: Aquatic ecology assessment; Terrestrial ecology assessment; Groundwater risk report; River hydraulics / waterway capacity
			District Plan	Trevors Road deemed to be designated in the District Plan. Connection from Trevors Road, bridge crossing location, and connection across Greenfields will need to be designated	Road status of Trevors Road need to be changed from Local Road to Arterial Road Will require: Traffic impact analysis; Cultural impact assessment; Lan dscape assessment (bridge location and road connections); Noise impact assessment.

			Option B – Trevors Rd to East of Tinwald (contd)		
			Criteria	***Assessment***	***Notes***
	Policies, Plans, Strategies		District - Ashburton Transportation Study	Inconsistent with Study recommendations	Route to east of town not recommended in study
			LTCCP	Not inconsistent with Plan	
			Ashburton District Development Plan	Inconsistent with Development Plan	Does not provide linkages to areas of development in Plan
			Ashburton Town Centre Plan	Inconsistent with Plan	May result in town gravitating eastwards
			Ashburton Walking and Cycling Strategy	Not inconsistent with Strategy	
			Ashburton Parking Strategy	Not inconsistent with Strategy	
			Regional - RLTS	Not inconsistent with Strategy	
			RLTP	Not Inconsistent with Programme	
			CTRIP	Not inconsistent with Plan	
			National - LTMA,	Not inconsistent with Act	
			NLTP	Not inconsistent with Plan	
	Economics		Cost	Moderate cost	Based on cost of upgrading Trevors Road and constructing new road on South side
			Economic Assessment – Benefit / Cost	Low Benefit Cost (moderate cost and smaller benefit)	Small number of users results in small user benefits
			Assist Economic Development	Little overall economic contribution	Likely to attract small traffic volumes
			Funding	NZTA funding unlikely	High cost and smaller BCR
			Integration with other local projects	Little integration	Does not relate to local projects, including Ashburton Business Estate, Art Gallery
			Use of existing infrastructure	Little use of existing infrastructure	New road construction on South side, some use of local roads on North side – likely to require significant upgrade
	Risks		Natural Hazards	No natural hazards identified at this time	
			Funding	NZTA funding unlikely	Refer note under Economics
			Existing Bridge	Little risk to bridge identified at this time	
	Environmental Impacts		Impacts on Residents (Noise, vibration and disturbance)	Moderate Impact	Will increase volume on low volume, low capacity local roads (north side). Will require new roads on Greenfield sites(south side)
			Visual Impact – South approach	Moderate impact	Change from open rural land to Principal local road
			Visual Impact - River	Moderate Impact	Will have impact on Riparian margins on both sides of river. Visible to small numbers of people
			Visual Impact – North Approach	Moderate Impact	Change from low volume urban road to principal local road
			Consistency with surrounding environment	Moderate impact	Low volume local road (Trevors Road) will change to principal road
			Water Quality (discharge from bridge)	Minor impact	Small discharge from bridge
			Land Impacts	Moderate impact	Impact on rural land on south approaches
	Wider Outcomes		Community Outcomes	Provides few community benefits	Small reduction in traffic on existing SH1
			Social	Limits linkages within Ashburton	
			Public Health (considers air pollution impacts, and impacts of increased active modes such as walking and cycling).	Neutral	Small benefits from small reduction in air pollution in town. Small disbenefits from not encouraging walking and cycling

			Option C- Leeston St to East of Tinwald		
			Criteria	***Assessment***	***Notes***
Critical Factors	***Access and Mobility***		Personal Safety/Security (considers the extent to which personal safety and security [particularly of pedestrians and cyclists] is able to be enhanced through measures such as public surveillance).	Moderate Personal Safety / Security	Route is outside of town and provides limited opportunity for observation on South side. It is on the current edge of town on North side. However distance from town makes it unlikely to be used by pedestrians or cyclists
			Mobility (considers the ability of motor vehicles, pedestrians and cyclists to move about the transportation network).	Adequate mobility for SH through traffic. Poor mobility for local traffic on north side. Good mobility for local traffic on south side.	Little reduction in SH traffic volumes likely to result in little change in SH mobility. Leeston & Oxford Streets comparatively narrow low volume local residential streets. Conflict and side friction likely to limit mobility. Good mobility on new road on south side
			Relationship to existing and future infrastructure and facilities	Uses existing infrastructure on North side. Does not relate with existing infrastructure on South side	Leeston & Oxford Streets likely to need upgrade
			Connectivity	Little connectivity	On extreme edge of town. Does not connect town well. Leeston & Oxford Streets do not connect to Walnut Ave / Albert St
			Access esp to key destinations	Little access to destinations in town	
			Pedestrian and Cyclist, including access along river	Little access for pedestrians and cyclists to destinations in town	Can provide access to Ashburton walkway along river. However not likely to be desirable route for pedestrians and cyclists due to distance from town
			Severance	Route causes little severance. However does not address existing severance issues of SH!	Likely to result in little traffic reduction on SH1 traffic
			Route Security	Good route security	Will provide viable alternative route should SH1 be unavailable
	Land		Land Acquisition and access	Privately owned rural land would be required on the South approaches	
	Engineering- Technical		Road Safety	Little impact on road safety	Small increase in traffic numbers likely on Leeston & Oxford Streets, and associated small reduction on SH1. Leeston & Oxford Streets & surrounding local roads are low volume, minor roads. Small increase in traffic likely to have negative impact on road safety on these roads. Small reduction in vehicles turning right onto SH1 from Tinwald.
			Relationship with State Highways	Poor linkages with SH on North side. Costly to provide linkages on South side	
			Relationship with local roads	Poor connection to local roads on South side. Linkages to low volume local roads on North side	Leeston & Oxford Streets & surrounding local roads are low volume, minor roads
			Relationship with Railway	Likely to result in little change in traffic volumes at existing rail crossings	
			Separation of State Highway and Local traffic	Poor Separation	Likely to result in little change in composition of SH traffic
			Geotech	No Geotechnical constraints identified at this time	
			Bridge Structure	No structural constraints identified at this time	
			Secondary Purposes (Utility services etc)	Little connection to services on South side	
			Constructability	No constructability issues identified at this time	
	RMA		Consentability	All bridge and new road construction will require full range of consents from Environment Canterbury (RMA s.9, s.13, s.14, s15)	Will require: Aquatic ecology assessment; Terrestrial ecology assessment; Groundwater risk report; River hydraulics / waterway capacity
			District Plan	Leeston & Oxford Streets deemed to be designated in the District Plan. Connection from Leeston St, bridge crossing location, and connection across Greenfields will need to be designated There is an ECan designation for soil conservation and river control, on the south side of the river	Road status of Leeston & Oxford Streets needs to be changed from Local Road to Principal Road (or Arterial) Will require: Traffic impact analysis; Cultural impact assessment; Landscape assessment (bridge location and road connections); Noise impact assessment

			Option C- Leeston St to East of Tinwald (contd)		
			Criteria	***Assessment***	***Notes***
	Policies, Plans, Strategies		District - Ashburton Transportation Study	Inconsistent with Study recommendations	Route to east of town not recommended in study
			LTCCP	Not inconsistent with Plan	
			Ashburton District Development Plan	Does not support Development Plan	Does not provide linkages to areas of development in Plan
			Ashburton Town Centre Plan	Inconsistent with Plan	May result in town gravitating eastwards
			Ashburton Walking and Cycling Strategy	Not inconsistent with Strategy	
			Ashburton Parking Strategy	Not inconsistent with Strategy	
			Regional - RLTS	Not inconsistent with Strategy	
			RLTP	Not Inconsistent with Programme	
			CTRIP	Not inconsistent with Plan	
			National - LTMA,	Not inconsistent with Act	
			NLTP	Not inconsistent with Plan	
	Economics		Cost	Moderate cost	Based on cost of upgrading Leeston & Oxford Streets and constructing new road on South side
			Economic Assessment – Benefit / Cost	Low Benefit Cost (moderate cost and smaller benefit)	Small number of users results in small user benefits
			Assist Economic Development	Little overall economic contribution	Likely to attract small traffic volumes
			Funding	NZTA funding unlikely	High cost and smaller BCR
			Integration with other local projects	Little integration	Does not relate to local projects at all
			Use of existing infrastructure	Little use of existing infrastructure	New road construction on South side, some use of local roads on North side – likely to require significant upgrade
	Risks		Natural Hazards	No natural hazards identified at this time	
			Funding	NZTA funding unlikely	Refer note under Economics
			Existing Bridge	Little risk to bridge identified at this time	
	Environmental Impacts		Impacts on Residents (Noise, vibration and disturbance)	Moderate Impact	Will increase volume on low volume, low capacity local roads (north side). Will require new roads (south side)
			Visual Impact – South approach	Moderate impact	Change from open rural land to Principal local road
			Visual Impact - River	Moderate Impact	Will have impact on Riparian margins on both sides of river. Visible to people in urban area of Ashburton
			Visual Impact – North Approach	Moderate Impact	Change from low volume urban road to principal local road
			Consistency with surrounding environment	Moderate impact	Low volume local roads (Oxford and Leeston Roads) will change to principal roads
			Water Quality (discharge from bridge)	Minor impact	Small discharge from bridge
			Land Impacts	Moderate impact	Impact on rural land on south approaches
	Wider Outcomes		Community Outcomes	Provides few community benefits	Small reduction in traffic on existing SH1
			Social	Limits linkages within Ashburton	
			Public Health (considers air pollution impacts, and impacts of increased active modes such as walking and cycling).	Neutral	Small benefits in reduction in air pollution in town. Small disbenefits in not encouraging walking and cycling

			Option D – Chalmers Ave to East of Tinwald		
			Criteria	***Assessment***	***Notes***
Critical Factors	***Access and Mobility***		Personal Safety/Security (considers the extent to which personal safety and security [particularly of pedestrians and cyclists] is able to be enhanced through measures such as public surveillance).	Good personal safety / security (assuming future development)	Route is currently outside of town and provides limited opportunity for observation on South side. Future residential development in Tinwald is likely to extend to route. It connects to major route with good observation on North side (Chalmers Ave)
			Mobility (considers the ability of motor vehicles, pedestrians and cyclists to move about the transportation network).	Provides good mobility	Chalmers Ave is a wide street with good mobility
			Relationship to existing and future infrastructure and facilities	Uses existing infrastructure on North side Connects to likely future infrastructure on south side	Chalmers Ave is a high capacity principal road
			Connectivity	Good connectivity	Utilises existing north south route, with good connections to major east west routes (Moore St, Havelock St, Walnut Ave). Will connect to residential area proposed in Ashburton Development Plan
			Access especially to key destinations	Provides good access to most destinations	North south and east west routes provide access to most destinations in centre of town. Bridge St (extension of Chalmers Ave) provides access to Ashburton Business Estate
			Pedestrian and Cyclist, including access along river	Moderate Pedestrian / Cyclist access	Will provide access between east Tinwald and East Ashburton. Can provide access to Ashburton walkway along river
			Severance	Neutral	Increased traffic on Chalmers Ave may increase severance effects there. Reduced traffic on SH1 may reduce severance effects there
			Route Security	Good route security	Will provide viable alternative route should SH1 be unavailable
	Land		Land Acquisition and access	Privately owned rural land would be required on the South approaches to provide linkages with Tinwald	There may be opportunity to incorporate approaches and linkages into future development of proposed residential zone east of Tinwald. Would require Outline Development Plan
	Engineering- Technical		Road Safety	Positive impact on road safety	Significant reduction in traffic on SH1 including right turning onto SH1 at uncontrolled intersections in Tinwald and corresponding increase on Chalmers Ave. Likely to result in reduction in accidents on SH1 & smaller increase on Chalmers Ave
			Relationship with State Highways	Good linkages with SH via Moore St, Havelock St and Walnut Ave on North side. Costly to provide linkages on South side at Tinwald	
			Relationship with local roads	Connection to local roads on South side likely to improve with development to east of Tinwald. Linkages to principal local roads on North side	Chalmers Ave, Moore St, Havelock Street, and Walnut Ave are high volume principal local roads
			Relationship with Railway	Likely to result in reduction in traffic volumes at existing rail crossings	Traffic between Tinwald and East Ashburton will not need to cross railway twice.
			Separation of State Highway and Local traffic	Good separation	Likely to result in significant proportion of local traffic using new route, and State Highway through traffic remaining on State Highway

			Option D – Chalmers Ave to East of Tinwald (contd)		
			Criteria	***Assessment***	***Notes***
			Geotech	No Geotechnical constraints identified at this time	
			Bridge Structure	No structural constraints identified at this time	
			Secondary Purposes (Utility services etc)	Will provide good connection for services between north and future development in Tinwald	
			Constructability	No constructability issues identified at this time	
	RMA		Consentability	All bridge and new road construction will require full range of consents from Environment Canterbury (RMA s.9, s.13, s.14, s15)	Will require: Aquatic ecology assessment; Terrestrial ecology assessment; Groundwater risk report; River hydraulics / waterway capacity
			District Plan	Chalmers Ave deemed to be designated in the District Plan. Connection from Chalmers Ave, bridge crossing location, and connection across Greenfields will need to be designated. There are ECan and ADC designations (No's 23 and 102 on Planning Map in Appendix K) for purposes of soil conservation and river control, and for recreation purposes	Chalmers Ave already a Principal road in District Plan (may be a need to change to Arterial) Will require: Traffic impact analysis; Cultural impact assessment; Landscape assessment (bridge location and road connections); Noise impact assessment
	Policies, Plans, Strategies		District - Ashburton Transportation Study	Consistent with Study recommendations	This is route recommended in Study
			LTCCP	Not inconsistent with Plan	2nd bridge has been identified in LTCCP
			Ashburton District Development Plan	Supports Development Plan	Provides linkages to area of Tinwald identified for future development in Plan
			Ashburton Town Centre Plan	Consistent with Plan	Likely to have little impact on town centre
			Ashburton Walking and Cycling Strategy	Not inconsistent with Strategy	Provides alternative walking and cycling links between north and south Ashburton. Distance from centres of Tinwald and Ashburton may discourage some cyclists
			Ashburton Parking Strategy	Not inconsistent with Strategy	
			Regional - RLTS	Not Inconsistent with Strategy	
			RLTP	Not Inconsistent with Programme	
			CTRIP	Not inconsistent with Plan	
			National - LTMA,	Not inconsistent with Act	
			NLTP	Not inconsistent with Plan	
	Economics		Cost	Moderate cost	Based on cost of constructing new road on South side. There may be potential to minimise cost through developer contributions related to providing access to potential residential developments abutting the road in Tinwald
			Economic Assessment – Benefit / Cost	High Benefit Cost (moderate cost and high benefit)	Provides transport benefits for high number of users
			Assist Economic Development	Good economic contribution	Provides good access to Ashburton Business Estate, Ashburton CBD, and businesses in Tinwald. Reduces local traffic on SH1, thereby improving travel times for through traffic
			Funding	NZTA funding possible	Project would need to meet NZTA funding criteria at time of application
			Integration with other local projects	Good integration	Provides good links to Ashburton Business Estate, and to proposed Art Gallery / Museum site
			Use of existing infrastructure	Moderate use of existing infrastructure	New road construction on South side. Extensive use of existing roads on north side
	Risk		Natural Hazards	No natural hazards identified at this time	
			Funding	NZTA funding possible	Refer note under economic Factors
			Existing Bridge	Little risk to bridge identified at this time	

			Option D – Chalmers Ave to East of Tinwald (contd)		
			Criteria	***Assessment***	***Notes***
	Environmental Impacts		Impacts on Residents (Noise, vibration and disturbance)	Moderate Impact	Will increase volume on moderate volume, high capacity local roads (north side). Will require new roads (south side)
			Visual Impact – South approach	Moderate impact	Change from open rural land to Principal local road. Impact reduced if future urban development extends to new road
			Visual Impact - River	Moderate Impact	Will have impact on Riparian margins on both sides of river. Visible to people in urban area of Ashburton
			Visual Impact – North Approach	Minor Impact	Some impact on parkland at end of Chalmers Ave. Little impact on Chalmers Ave
			Consistency with surrounding environment	Moderate impact	Traffic volumes will increase on Principal local roads which have adequate capacity to carry increased traffic (Chalmers Ave, Moore St, Havelock St, Walnut Ave). A new principal road through undeveloped land in Tinwald will be inconsistent with the current environment, but consistent with proposed development
			Water Quality (discharge from bridge)	Minor impact	Small discharge from bridge
			Land Impacts	Moderate impact	Impact on rural land on south approaches. Impact lessened if land zoned residential in future
	Wider Outcomes		Community Outcomes	Good community benefits	Significant reduction in traffic on existing SH1, partially offset by increase on Chalmers Ave. Improves accessibility to activities within Ashburton
			Social	Effective linkages within Ashburton	Provides linkages between communities of north and south Ashburton
			Public Health (considers air pollution impacts, and impacts of increased active modes such as walking and cycling).	Neutral	Provides improved environment for pedestrians and cyclists. However detour required for access between Tinwald and central Ashburton may discourage some pedestrians and cyclists. Redistribution of air pollution effects from SH1 to new route

			Option D-E – Chalmers Ave to Grove St		
			Criteria	***Assessment***	***Notes***
Critical Factors	***Access and Mobility***		Personal Safety/Security (considers the extent to which personal safety and security [particularly of pedestrians and cyclists] is able to be enhanced through measures such as public surveillance).	Good personal safety / security	Route within town and provides opportunity for observation on both sides (Grove St and Chalmers Ave)
			Mobility (considers the ability of motor vehicles, pedestrians and cyclists to move about the transportation network).	Provides good mobility	Both Chalmers Ave and Grove St are wide streets with good mobility. Intersection priority may require changing to give priority to Grove St
			Relationship to existing and future infrastructure and facilities	Uses existing infrastructure on both sides	Chalmers Ave is a high capacity principal road. Grove St is a wide local road with significant capacity for additional traffic
			Connectivity	Good connectivity	Utilises existing north south route, with good connections to major east west routes (Moore St, Havelock St, Walnut Ave). Grove St has good connectivity to existing east Tinwald residential and business areas
			Access especially to key destinations	Provides good access to most destinations	North south and east west routes provide access to most destinations in centre of town. Bridge St (extension of Chalmers Ave) provides access to Ashburton Business Estate
			Pedestrian and Cyclist, including access along river	Moderate Pedestrian / Cyclist access	Will provide access between east Tinwald and East Ashburton. Can provide access to Ashburton walkway along river
			Severance	Moderate severance effects	Increased traffic on Chalmers Ave and Grove St may increase effects there. Reduced traffic on SH1 may reduce severance effects there
			Route Security	Good route security	Will provide viable alternative route should SH1 be unavailable
	Land		Land Acquisition and access	A small section of privately owned land would be required between the end of Grove St and the river	
	Engineering- Technical		Road Safety	Positive impact on road safety	Significant reduction in traffic on SH1 including right turning onto SH1 at uncontrolled intersections in Tinwald, and corresponding increase on Chalmers Ave and Grove St. Likely to result in reduction in accidents on SH1 & smaller increase on Chalmers Ave and Grove St. Changes to priority at intersections on Grove St (to give priority to through traffic) likely to result in short term increase in accidents at those intersections while drivers become familiar with changes
			Relationship with State Highways	Good linkages with SH via Moore St, Havelock St and Walnut Ave, and several local roads on North side. Linkages via local roads, including Graham St on south side	SH traffic likely to use local roads to access SH, particularly on south side. Possible development of signals at Agnes St / Lagmhor Rd may concentrate traffic at this location
			Relationship with local roads	Good connection to local roads on South side. Linkages to principal local roads on North side	Chalmers Ave, Moore St, Havelock Street, and Walnut Ave are high volume principal local roads
			Relationship with Railway	Likely to result in reduction in traffic volumes at existing rail crossings	Traffic between Tinwald and East Ashburton will not need to cross railway twice
			Separation of State Highway and Local traffic	Good Separation	Likely to result in significant proportion of local traffic using new route, and State Highway through traffic remaining on State Highway
			Geotech	No Geotechnical constraints identified at this time	
			Bridge Structure	No structural constraints identified at this time	

			Option D-E – Chalmers Ave to Grove St (contd)		
			Criteria	***Assessment***	***Notes***
			Secondary Purposes (Utility services etc)	Will provide good connection for services between north and future development in Tinwald	
			Constructability	No constructability issues identified at this time	
	RMA		Consentability	All bridge and new connecting road construction will require full range of consents from Environment Canterbury (RMA s.9, s.13, s.14, s15)	Will require: Aquatic ecology assessment; Terrestrial ecology assessment; River hydraulics / waterway capacity
			District Plan	Chalmers Ave and Grove St both deemed to be designated in the District Plan. Connection from Chalmers Ave, bridge crossing location, and new connection to Grove St will need to be designated. There are ECan and ADC designations (No's 23 and 102 on Planning Map in Appendix K) for purposes of soil conservation and river control, and for recreation purposes	Chalmers Ave already a Principal road in District Plan (may be a need to change to Arterial) Road status of Grove St need to be changed from Local Road to Principal Road (or Arterial) Will require: Traffic impact analysis; Cultural impact assessment; Landscape assessment (bridge location and road connections); Noise impact assessment
	Policies, Plans, Strategies		District - Ashburton Transportation Study	Consistent with Study recommendations	This route is very similar to that recommended in Study
			LTCCP	Not inconsistent with Plan	2nd bridge has been identified in LTCCP
			Ashburton District Development Plan	Supports Development Plan	Provides linkages to area of Tinwald identified for future development in Plan
			Ashburton Town Centre Plan	Consistent with Plan	Likely to have little impact on town centre
			Ashburton Walking and Cycling Strategy	Not inconsistent with Strategy	Provides alternative walking and cycling links between north and south Ashburton. Distance from centres of Tinwald and Ashburton may discourage some cyclists
			Ashburton Parking Strategy	Not inconsistent with Strategy	
			Regional - RLTS	Not Inconsistent with Strategy	
			RLTP	Not Inconsistent with Programme	
			CTRIP	Not inconsistent with Plan	
			National - LTMA,	Not inconsistent with Act	
			NLTP	Not inconsistent with Plan	
	Economics		Cost	Moderate cost	Based on using existing roads on both north and south side of river. Slightly higher bridge cost due to greater length. (bridge perpendicular to river approx 340m long, bridge at skew to river approx 370m long)
			Economic Assessment – Benefit / Cost	High Benefit Cost (low cost and high benefit)	Provides transport benefits for high number of users
			Assist Economic Development	Good economic contribution	Provides good access to Ashburton Business Estate, to Ashburton CBD, and to businesses in Tinwald. Reduces local traffic on SH1, thereby improving travel times for through traffic
			Funding	NZTA funding possible	Project would need to meet NZTA funding criteria at time of application
			Integration with other local projects	Good integration	Provides good links to Ashburton Business Estate, and to proposed Art Gallery / Museum site
			Use of existing infrastructure	Extensive use of existing infrastructure	Extensive use of existing roads on both sides
	Risks		Natural Hazards	No natural hazards identified at this time	
			Funding	NZTA funding possible	Refer note under economic Factors
			Existing Bridge	Little risk to bridge identified at this time	

			Option D-E – Chalmers Ave to Grove St (contd)		
			Criteria	***Assessment***	***Notes***
	Environmental Impacts		Impacts on Residents (Noise, vibration and disturbance)	Moderate Impact	Will increase volume on moderate volume, high capacity local roads (north side), and on low volume moderate capacity local roads (south side)
			Visual Impact – South approach	Little impact	Little change to Grove St (existing road). Some impact on land between Carters Tce and river
			Visual Impact - River	Moderate Impact	Will have impact on Riparian margins on both sides of river. Visible to people in urban area of Ashburton
			Visual Impact – North Approach	Minor Impact	Some impact on parkland at end of Chalmers Ave. Little impact on Chalmers Ave
			Consistency with surrounding environment	Moderate impact	Traffic volumes will increase on Principal local roads which have adequate capacity to carry increased traffic (Chalmers Ave, Moore St, Havelock St, Walnut Ave), on local roads which have adequate capacity (Grove St), and on low volume local cross roads in Tinwald)
			Water Quality (discharge from bridge)	Minor impact	Small discharge from bridge
			Land Impacts	Moderate impact	Impact on land required on south approaches between end of Grove St and river
	Wider Outcomes		Community Outcomes	Good community benefits	Significant reduction in traffic on existing SH1. Partially offset by increase in traffic on Chalmers Ave and Grove St. Improves accessibility to activities within Ashburton
			Social	Effective linkages within Ashburton	Provides linkages between communities of north and south Ashburton
			Public Health (considers air pollution impacts, and impacts of increased active modes such as walking and cycling).	Neutral	Provides improved environment for pedestrians and cyclists. However detour required for access between Tinwald and central Ashburton may discourage some pedestrians and cyclists. Redistribution of air pollution effects from SH1 to new route

			Option E – William St to Grove St		
			Criteria	***Assessment***	***Notes***
Critical Factors	***Access and Mobility***		Personal Safety/Security (considers the extent to which personal safety and security [particularly of pedestrians and cyclists] is able to be enhanced through measures such as public surveillance).	Good personal safety / security	Route within town and provides opportunity for observation on both sides (Grove St and William St)
			Mobility (considers the ability of motor vehicles, pedestrians and cyclists to move about the transportation network).	Provides moderate mobility	Grove St is a wide residential street with good mobility. Intersection priority may require changing to give priority to Grove St. William St is a residential street with traffic calming measures to reduce speed and capacity at the northern end
			Relationship to existing and future infrastructure and facilities	Uses existing infrastructure on both sides	William St is a low capacity residential street. It will require significant upgrade to cope with additional traffic. Grove St is a wide local road with significant capacity for additional traffic
			Connectivity	Moderate connectivity	William St provides connectivity to Ashburton CBD. Indirect route to North East Ashburton and Ashburton Business Estate. Grove St has good connectivity to existing east Tinwald residential and business areas
			Access especially to key destinations	Provides good access to most destinations	North south and east west routes provide access to most destinations in centre of town. Access to north east Ashburton via indirect route (Walnut Ave and Bridge St)
			Pedestrian and Cyclist, including access along river	Moderate Pedestrian / Cyclist access	Will provide access between east Tinwald and East Ashburton. Can provide access to Ashburton walkway along river
			Severance	Significant severance effects	Significant severance effect on William Street residential street. Reduced traffic on SH1 may reduce severance effects there
			Route Security	Good route security	Will provide viable alternative route should SH1 be unavailable
	Land		Land Acquisition and access	A small section of privately owned land would be required between the end of Grove St and the river	
	Engineering -Technical		Road Safety	Negative impact on road safety	Significant reduction in traffic on SH1 including right turning onto SH1 at uncontrolled intersections in Tinwald and corresponding increase on William St and Grove St. Likely to result in reduction in accidents on SH1 & increase on William St and Grove St. Constrained residential nature of William St likely to result in larger increase there. Increase in right turning traffic at William St / Walnut Ave intersection adjacent to Intermediate School likely to increase accidents there. Changes to priority at intersections on Grove St and William St (to give priority to through traffic) likely to result in short term increase in accidents at those intersections while drivers become familiar with changes
			Relationship with State Highways	Good linkages with SH via Moore St, Havelock St and Walnut Ave on North side, and via local roads on south side	
			Relationship with local roads	Good connection to local roads on South side. Linkages to principal east west local roads, and low volume local road, on North side	Moore St, Havelock Street and Walnut Ave are high volume principal local roads. William St is low volume residential street, with traffic calming at north end near intermediate school
			Relationship with Railway	Likely to result in reduction in traffic volumes at existing rail crossings	Traffic between Tinwald and East Ashburton will not need to cross railway twice
			Separation of State Highway and Local traffic	Good Separation	Likely to result in significant proportion of local traffic using new route, and State Highway through traffic remaining on State Highway
			Geotech	No Geotechnical constraints identified at this time	

			Option E – William St to Grove St (contd)		
			Criteria	***Assessment***	***Notes***
			Bridge Structure	No structural constraints identified at this time	
			Secondary Purposes (Utility services etc)	Will provide good connection for services between north and south Ashburton	
			Constructability	No constructability issues identified at this time	
	RMA		Consentability	All bridge and new connecting road construction will require full range of consents from Environment Canterbury (RMA s.9, s.13, s.14, s15)	Will require: Aquatic ecology assessment; Terrestrial ecology assessment; River hydraulics / waterway capacity
			District Plan	William St and Grove St both deemed to be designated in the District Plan. Connection from William St, bridge crossing location, and new connection to Grove St will need to be designated There are ECan and ADC designations (No's 23 and 102 on Planning Map in Appendix K) for purposes of soil conservation and river control, and for recreation purposes	Road status of both William St and Grove St need to be changed from Local Road to Principal Road (or Arterial) Will require: Traffic impact analysis; Cultural impact assessment; Landscape assessment (bridge location and road connections); Noise impact assessment
	Policies, Plans, Strategies		District - Ashburton Transportation Study	Not inconsistent with Study recommendations	This route is similar to that recommended in Study
			LTCCP	Not inconsistent with Plan	2nd bridge has been identified in LTCCP
			Ashburton District Development Plan	Supports Development Plan	Provides linkages to area of Tinwald identified for future development in Plan
			Ashburton Town Centre Plan	Consistent with Plan	Likely to have little impact on town centre
			Ashburton Walking and Cycling Strategy	Supports Strategy	Provides alternative walking and cycling links between north and south Ashburton
			Ashburton Parking Strategy	Not inconsistent with Strategy	
			Regional - RLTS	Not Inconsistent with Strategy	
			RLTP	Not Inconsistent with Programme	
			CTRIP	Not inconsistent with Plan	
			National - LTMA,	Not inconsistent with Act	
			NLTP	Not inconsistent with Plan	
	Economics		Cost	Moderate cost	Based on using existing roads on both north and south side of river. Upgrades needed on William St
			Economic Assessment – Benefit / Cost	Moderate Benefit Cost (moderate cost and moderate benefit)	Provides transport benefits for moderate number of users
			Assist Economic Development	Good economic contribution	Provides good access to Ashburton CBD, and to businesses in Tinwald, moderate access to Ashburton Business Estate. Reduces local traffic on SH1, thereby improving travel times for through traffic.
			Funding	NZTA funding possible	Project would need to meet NZTA funding criteria at time of application
			Integration with other local projects	Good integration with some projects	Provides good links to proposed Art Gallery / Museum site. Provides indirect links to Ashburton Business Estate
			Use of existing infrastructure	Moderate use of existing infrastructure	Extensive use of existing roads on both sides. Significant reconstruction of William St required
	Risks		Natural Hazards	No natural hazards identified at this time	
			Funding	NZTA funding possible	Refer note under economic Factors
			Existing Bridge	Little risk to bridge identified at this time	

			Option E – William St to Grove St (contd)		
			Criteria	***Assessment***	***Notes***
	Environmental Impacts		Impacts on Residents (Noise, vibration and disturbance)	Moderate Impact	Will increase volume on low capacity, residential roads (north side), and on low volume moderate capacity local roads (south side)
			Visual Impact – South approach	Little impact	Little change to Grove St (existing road). Some impact on land between Carters Tce and river
			Visual Impact - River	Moderate Impact	Will have impact on Riparian margins on both sides of river. Visible to people in urban area of Ashburton
			Visual Impact – North Approach	Moderate impact	Some impact on Ashburton walkway at end of William St. Likely positive impact on industrial land at end of William St. Some impact on William St (particularly northern end where existing traffic calming measures are in place)
			Consistency with surrounding environment	Moderate impact	Traffic volumes will increase on Principal local roads which have adequate capacity to carry increased traffic (Moore St, Havelock St, Walnut Ave), on local roads which have adequate capacity (Grove St, and on local low volume roads (William St). William St has had traffic calming implemented, presumably to reduce traffic volumes and speeds
			Water Quality (discharge from bridge)	Minor impact	Small discharge from bridge
			Land Impacts	Moderate impact	Impact on land required on south approaches between end of Grove St and river
	Wider Outcomes		Community Outcomes	Some community benefits, some disbenefits	Significant reduction in traffic on existing SH1. Offset by increase in traffic on William St and Grove St. Improves accessibility to activities within Ashburton
			Social	Effective linkages within Ashburton. Some severance in residential areas	Provides linkages between communities of north and south Ashburton. Severance effects in residential area around William St
			Public Health (considers air pollution impacts, and impacts of increased active modes such as walking and cycling).	Neutral	Provides improved environment for pedestrians and cyclists. Redistribution of air pollution effects from SH1 to new route

			Option F – Cass St to Thomson St		
			Criteria	***Assessment***	***Notes***
Critical Factors	***Access and Mobility***		Personal Safety/Security (considers the extent to which personal safety and security [particularly of pedestrians and cyclists] is able to be enhanced through measures such as public surveillance).	Good personal safety / security	Route within town and provides opportunity for observation on both sides (Cass St and Thomson St)
			Mobility (considers the ability of motor vehicles, pedestrians and cyclists to move about the transportation network).	Provides poor mobility	Cass St has high side friction due to vehicles parking and manoeuvring associated with CBD retail area. Cass St passes around Mona Square, resulting in vehicles braking and accelerating, and consequently poor mobility. Thomson St is a wide residential street with good mobility. Intersection priority on both Cass St and Thomson St may require changing to give priority to through traffic
			Relationship to existing and future infrastructure and facilities	Uses existing infrastructure on both sides	Relates well to existing east west streets on both sides
			Connectivity	Moderate connectivity	Cass St provides connectivity to Ashburton CBD. Indirect route to North East Ashburton and Ashburton Business Estate. Thomson St has good connectivity to existing urban area in east Tinwald
			Access especially to key destinations	Provides moderate access to most destinations	North south and east west routes provide access to most destinations in centre of town. Access to north east Ashburton via indirect route (Walnut Ave and Bridge St)
			Pedestrian and Cyclist, including access along river	Moderate access	Will provide good pedestrian access between Tinwald residential area and CBD. Congestion and conflict with vehicles parking and manoeuvring in Cass St may discourage cyclists. Insufficient room for on road cycle facility in Cass St. Can provide access to Ashburton walkway along river
			Severance	Significant severance effects	Significant severance effect on Thomson Street and Cass St, esp in residential sections and adjacent to Intermediate School. Reduced traffic on SH1 may reduce severance effects there
			Route Security	Good route security	Will provide viable alternative route should SH1 be unavailable
	Land		Land Acquisition and access	Small sections of privately owned land would be required between the river and the ends of Thomson St and Cass St	
	Engineering- Technical		Road Safety	Negative impact on road safety	Small reduction in traffic on SH1 including right turning onto SH1 at uncontrolled intersections in Tinwald and corresponding increase on Cass St and Thomson St. Likely to result in reduction in accidents on SH1 & increase on Cass St and Thomson St. Constrained nature of Cass St in CBD, combined with vehicles parking and manoeuvring likely to result in significant conflict and accidents between through traffic and traffic accessing CBD. Potential safety issues at Cass Street intersection with Walnut Ave (immediately adjacent to Intermediate School) Changes to priority at intersections on Cass St and Thomson St (to give priority to through traffic) likely to result in short term increase in accidents at those intersections while drivers become familiar with changes

			Option F – Cass St to Thomson St (contd)		
			Criteria	***Assessment***	***Notes***
			Relationship with State Highways	Linkages with SH via Moore St, Havelock St and Walnut Ave on North side, and via local roads on south side Small reduction in local traffic on SH1	Conflict and side friction on Cass St likely to result in route being less desirable for local traffic passing through CBD
			Relationship with local roads	Good connection to local roads on South side. Linkages to principal east west local roads on North side. Cass St provides access and parking for businesses in CBD	Moore St, Havelock Street, and Walnut Ave are high volume principal local roads
			Relationship with Railway	Likely to result in small reduction in traffic volumes at existing rail crossings	Traffic between Tinwald and East Ashburton will not need to cross railway twice. Congestion and delays on Cass St may discourage motorists from using route so advantage not maximised
			Separation of State Highway and Local traffic	Poor separation	Likely to result in small proportion of local traffic using new route, due to Congestion and delays on Cass St
			Geotech	No Geotechnical constraints identified at this time	
			Bridge Structure	No structural constraints identified at this time	
			Secondary Purposes (Utility services etc)	Will provide good connection for services between north and south Ashburton	
			Constructability	No constructability issues identified at this time	
	RMA		Consentability	All bridge and new connecting road construction will require full range of consents from Environment Canterbury (RMA s.9, s.13, s.14, s15)	Will require: Aquatic ecology assessment; Terrestrial ecology assessment; River hydraulics / waterway capacity
			District Plan	Cass St and Thomson St both deemed to be designated in the District Plan. Connection from Cass St, bridge crossing location, and connection to Thomson St will need to be designated There are ECan and ADC designations (No's 23 and 102 on Planning Map in Appendix K) for purposes of soil conservation and river control, and for recreation purposes	Road status of both Cass St and Thomson St need to be changed from Local Road to Principal Road (or Arterial) Will require: Traffic impact analysis; Cultural impact assessment; Landscape assessment (bridge location and road connections); Noise impact assessment
	Policies, Plans, Strategies		District - Ashburton Transportation Study	Inconsistent with Study recommendations	Route through CBD not recommended in Study
			LTCCP	Not inconsistent with Plan	2nd bridge has been identified in LTCCP
			Ashburton District Development Plan	Supports Development Plan	Provides linkages to area of Tinwald identified for future development in Plan
			Ashburton Town Centre Plan	Inconsistent with Plan	Principal through road through CBD not supported by Town Centre Plan
			Ashburton Walking and Cycling Strategy	Inconsistent with Strategy	Inability to provide on road cycle facility on principal through route not supported by strategy
			Ashburton Parking Strategy	Inconsistent with Strategy	Principal through road through area of on street parking not supported by strategy
			Regional - RLTS	Not Inconsistent with Strategy	
			RLTP	Not Inconsistent with Programme	
			CTRIP	Not inconsistent with Plan	
			National - LTMA,	Not inconsistent with Act	
			NLTP	Not inconsistent with Plan	
	Economics		Cost	Moderate cost	Based on using existing roads on both north and south side of river. Upgrades needed on Cass St
			Economic Assessment – Benefit / Cost	Low Benefit Cost (moderate cost and low benefit)	Congestion, delays and safety issues on Cass St
			Assist Economic Development	Small economic contribution	Provides good access to, but poor mobility past, Ashburton CBD, moderate access to businesses in Tinwald, , and poor access to Ashburton Business Estate. Small reduction in local traffic on SH1, thereby little improvement in travel times for through traffic

			Option F – Cass St to Thomson St (contd)		
			Criteria	***Assessment***	***Notes***
			Funding	NZTA funding unlikely	Project would need to meet NZTA funding criteria at time of application. Large disbenefits make funding unlikely
			Integration with other local projects	Poor integration with local projects	Difficulty getting through CBD results in poor links to Business Estate, and to proposed Art Gallery / Museum site
			Use of existing infrastructure	Moderate use of existing infrastructure	Extensive use of existing roads on both sides.
	Risks		Natural Hazards	No natural hazards identified at this time	
			Funding	NZTA funding unlikely	Refer note under economic Factors
			Existing Bridge	Little risk to bridge identified at this time	
	Environmental Impacts		Impacts on Residents (Noise, vibration and disturbance)	Moderate Impact	Will increase volume on low capacity, residential roads (north side – north of CBD), and on low volume moderate capacity local roads (south side)
			Visual Impact – South approach	Little impact	Little change to Thomson St (existing road). Some impact on land between Carters Tce and river
			Visual Impact - River	Moderate Impact	Will have impact on Riparian margins on both sides of river. Visible to people in urban area of Ashburton
			Visual Impact – North Approach	Significant Impact	Some impact on Ashburton walkway at end of Cass St Likely positive impact on industrial land at end of William St. Significant impact on Mona Square
			Consistency with surrounding environment	Inconsistent	Through traffic volumes will increase on parking street in CBD (Cass St), on Cass St adjacent to Intermediate School, on local roads which have adequate capacity (Thomson St) and on local low volume roads particularly in Tinwald
			Water Quality (discharge from bridge)	Minor impact	Small discharge from bridge
			Land Impacts	Moderate impact	Impact on land required on both approaches between river end of Cass and Thomson Streets
	Wider Outcomes		Community Outcomes	Few community benefits, some disbenefits	Small reduction in traffic on existing SH1. Offset by increase in traffic on Cass St and Thomson St. Increase in traffic on Cass St outside Intermediate School
			Social	Poor linkages within Ashburton. Some severance in residential areas	Poor linkages between communities of north and south Ashburton. Severance effects in residential area around Cass Street
			Public Health (considers air pollution impacts, and impacts of increased active modes such as walking and cycling).	Negative impacts	Provides improved environment for pedestrians. Offset by poor environment for cyclists. Potential increase in pollution near to pedestrians & cyclists due to increased stop start traffic through CBD .

			Option G – 4 Lane Existing Bridge		
			Criteria	***Assessment***	***Notes***
Critical Factors	***Access and Mobility***		Personal Safety/Security (considers the extent to which personal safety and security [particularly of pedestrians and cyclists] is able to be enhanced through measures such as public surveillance).	Good personal safety / security	Route within town and provides opportunity for observation on both sides (Grove St and William St)
			Mobility (considers the ability of motor vehicles, pedestrians and cyclists to move about the transportation network).	Provides moderate mobility	4 laned SH1 route through Tinwald and Ashburton will provide good mobility for through traffic Crossing or accessing the route likely to be difficult at non-signalised intersections
			Relationship to existing and future infrastructure and facilities	Uses existing infrastructure on both sides	Relates well to existing east west streets on both sides
			Connectivity	Moderate connectivity	Will provide good north south connectivity, but reduce connectivity across town
			Access especially to key destinations	Provides moderate access	North south and east west routes provide access to most destinations in centre of town. Poor access for right turn out of East Tinwald. No parking likely on SH1 in order to minimise land requirements
			Pedestrian and Cyclist, including access along river	Pedestrian and cyclist access can be provided adjacent to SH1	Unpleasant environment adjacent to SH1 may discourage some pedestrians and cyclists
			Severance	High severance effects	Significant severance effects due to widening and traffic volumes on SH1
			Route Security	Poor route security	Does not provide viable alternative route should SH1 bridge be unavailable
	Land		Land Acquisition and access	Significant land required	Significant land required at intersections with cross roads near rail crossings
	Engineering- Technical		Road Safety	Negative impact on road safety	No reduction in traffic on SH1 No reduction in traffic turning onto SH1 at uncontrolled intersections (particularly in Tinwald) . High levels of conflict and associated accidents likely
			Relationship with State Highways	Relationship between SH1 and local roads will remain as is	
			Relationship with local roads	Relationship between SH1 and local roads will remain as is	
			Relationship with Railway	Little change in relationship with railway	
			Separation of State Highway and Local traffic	No change in proportion of local traffic using SH1	
			Geotech	No Geotechnical constraints identified at this time	
			Bridge Structure	No structural constraints identified at this time	
			Secondary Purposes (Utility services etc)	Does not allow alternative back up route for services	
			Constructability	No constructability issues identified at this time	
	RMA		Consentability	All bridge and new road construction will require full range of consents from Environment Canterbury (RMA s.9, s.13, s.14, s15)	Will require: Aquatic ecology assessment; Terrestrial ecology assessment; River hydraulics / waterway capacity.
			District Plan	Existing State Highway is designated. A new bridge alongside existing will need to be designated There are ECan and ADC designations (No's 23 and 102 on Planning Map in Appendix K) for purposes of soil conservation and river control, and for recreation purposes	Existing State Highway already classified Arterial Road in District Plan Will require: Traffic impact analysis; Cultural impact assessment; Landscape assessment (bridge location and road connections); Noise impact assessment

			Option G – 4 Lane Existing Bridge (contd)		
			Criteria	***Assessment***	***Notes***
	Policies, Plans, Strategies		District - Ashburton Transportation Study	Inconsistent with Study recommendations	Widening of bridge and sections of SH1 not recommended in Study
			LTCCP	Not inconsistent with Plan	2nd bridge has been identified in LTCCP
			Ashburton District Development Plan	Does not support Development Plan	Continuation of right turn onto SH1 does not promote development of east Tinwald as identified for future development in Plan
			Ashburton Town Centre Plan	Not inconsistent with Plan	
			Ashburton Walking and Cycling Strategy	Inconsistent with Strategy	Single pedestrian and cycle route along SH1 Unpleasant environment unlikely to encourage pedestrians and cyclists between Tinwald and Ashburton
			Ashburton Parking Strategy	Inconsistent with Strategy	Removal of parking on SH1 not supported by strategy
			Regional - RLTS	Inconsistent with Strategy	Lack of alternative route in case SH1 unavailable not supported by strategy
			RLTP	Not Inconsistent with Programme	
			CTRIP	Not inconsistent with Plan	
			National - LTMA,	Not inconsistent with Act	
			NLTP	Not inconsistent with Plan	
	Economics		Cost	High cost	4 laning of most of existing SH through Ashburton, possibly high land costs
			Economic Assessment – Benefit / Cost	Low Benefit Cost (High cost and moderate benefit)	Lack of connectivity within Ashburton reduces potential benefits
			Assist Economic Development	Small economic contribution	No improvement in access to Ashburton CBD, businesses in Tinwald, or Ashburton Business Estate. Additional capacity on SH1, improves travel times
			Funding	NZTA funding unlikely	Project would need to meet NZTA funding criteria at time of application. High cost and small benefits make funding unlikely
			Integration with other local projects	Poor integration with local projects	Does not improve links to Business Estate, and to proposed Art Gallery / Museum site
			Use of existing infrastructure	Small use of existing infrastructure	Will use existing infrastructure (SH1) which is near capacity. This will need duplication. Little use is made of existing infrastructure which has excess capacity
	Risks		Natural Hazards	No natural hazards identified at this time	
			Funding	NZTA funding unlikely	Refer note under economic Factors
			Existing Bridge	Little risk to bridge identified at this time	
	Environmental Impacts		Impacts on Residents (Noise, vibration and disturbance)	Moderate Impact	Road possibly closer to residential properties in southern Tinwald
			Visual Impact – South approach	Moderate Impact	Adjacent to existing SH1. Significant portion of widening will be in reserve land to west of SH1. Widening can be minimised by removing parking, which limits accessibility to businesses on SH1.
			Visual Impact - River	Minor Impact	Bridge will run parallel, and adjacent to existing rail bridge. Will have impact on Riparian margins on both sides of river
			Visual Impact – North Approach	Moderate Impact	Adjacent to existing SH1 Significant portion of widening will be in reserve land to east of SH1. Widening can be minimised by removing parking, which limits accessibility to businesses on SH1

			Option G – 4 Lane Existing Bridge (contd)		
			Criteria	***Assessment***	***Notes***
			Consistency with surrounding environment	Potentially inconsistent	4 laning is not inconsistent with SH1. However potential removal of parking likely to be inconsistent with retail and residential frontages along SH1
			Water Quality (discharge from bridge)	Minor impact	Small discharge from bridge
			Land Impacts	Moderate to high impact	Land potentially required on several frontages along SH1 if on street parking to be maintained
	Wider Outcomes		Community Outcomes	Little change in community outcomes	
			Social	Some severance in residential areas	Severance effects in across SH
			Public Health (considers air pollution impacts, and impacts of increased active modes such as walking and cycling).	Neutral impacts	Little improvement in environment for pedestrians and cyclists. Little change in pollution affects

			Option H – West St to Melcombe St (one way northbound – Existing bridge one way southbound)		
			Criteria	***Assessment***	***Notes***
Critical Factors	***Access and Mobility***		Personal Safety/Security (considers the extent to which personal safety and security [particularly of pedestrians and cyclists] is able to be enhanced through measures such as public surveillance).	Good personal safety / security	Route within town and provides opportunity for observation on both sides (SH1)
			Mobility (considers the ability of motor vehicles, pedestrians and cyclists to move about the transportation network).	Provides moderate mobility.	4 laned SH1 route through Tinwald and Ashburton will provide good mobility for through traffic Crossing or accessing the route likely to be difficult at non-signalised intersections
			Relationship to existing and future infrastructure and facilities	Uses existing infrastructure on both sides	Relates well to existing east west streets on both sides
			Connectivity	Poor connectivity	One way sections will only be able to connect to opposite direction at rail crossings
			Access especially to key destinations	Poor access	One way system limits access to business and residential properties in Tinwald on both SH1 and local streets. No parking likely on two way sections of SH1 in order to minimise land requirements
			Pedestrian and Cyclist, including access along river	Pedestrian and cyclist access can be provided adjacent to SH1 and across railway	Facilities for pedestrian and cyclist crossing railway will be required. Unpleasant environment adjacent to SH1 may discourage some pedestrians and cyclists
			Severance	High severance effects	Significant severance effects due to widening and traffic volumes on SH1
			Route Security	Poor route security	Does not provide viable alternative route should SH1 bridge be unavailable
	Land		Land Acquisition and access	Potential significant land acquisition	Frontages of a number of properties on SH1 likely to be required. Significant additional land likely at junction of one way and two way sections (refer sketch no 3) Some commercial property required at northern side of river. Property required between end of Melcombe St and river
	Engineering- Technical		Road Safety	Negative impact on road safety	All traffic on one way section would turn left onto SH1. Large volumes of traffic will be required do a U turn at junction of one way and two way sections, and in close proximity to railway. Significant potential for conflict and accidents
			Relationship with State Highways	Neutral impact on SH	One way section of SH1 positive for through traffic. Junction between one and two way sections potentially confusing for those not familiar with layout
			Relationship with local roads	Negative impacts on local roads	Melcombe Road will become one way section of SH1. Local roads in Tinwald will have left turn only access onto one way section of SH1
			Relationship with Railway	Negative impact on railway	Complicated junctions between one and two way sections immediately adjacent to level crossings likely to cause confusion and associated safety impacts on crossings
			Separation of State Highway and Local traffic	No change in proportion of local traffic using SH1	
			Geotech	No Geotechnical constraints identified at this time	
			Bridge Structure	No structural constraints identified at this time	
			Secondary Purposes (Utility services etc)	Does not allow alternative back up route between Tinwald and Ashburton for services	
			Constructability	Constructability difficult at Carters Tce rail crossing	Existing rail underpass at Carters Tce unsuitable for large vehicles or heavy traffic volumes. Difference in level between railway and road would make a level crossing difficult. Additional cut required to put road under railway. Would pose difficulty for over dimension loads accessing Tinwald

			Option H – West St to Melcombe St (one way northbound – Existing bridge one way southbound) (contd)		
			Criteria	***Assessment***	***Notes***
	RMA		Consentability	All new road and bridge construction will require full range of consents from Environment Canterbury (RMA s.9, s.13, s.14, s15)	Will require: Aquatic ecology assessment; Terrestrial ecology assessment; River hydraulics / waterway capacity
			District Plan	Existing State Highway is designated. Melcombe St is deemed to be designated All new road connections and new bridge alongside existing will need to be designated. There is a designation for NZ Rail (no 396 on planning map in Appendix K) which may affect the location of the second bridge	Existing State Highway already classified Arterial Road in District Plan Road status of Melcombe St need to be changed from Local Road to Principal Road (or Arterial) Will require: Traffic impact analysis; Cultural impact assessment; Landscape assessment (bridge location and road connections); Noise impact assessment
	Policies, Plans, Strategies		District - Ashburton Transportation Study	Inconsistent with Study recommendations	Widening of sections of SH1 not recommended in Study
			LTCCP	Not inconsistent with Plan	2nd bridge has been identified in LTCCP
			Ashburton District Development Plan	Does not support Development Plan	Does not promote development of east Tinwald as identified for future development in Plan
			Ashburton Town Centre Plan	Not inconsistent with Plan	
			Ashburton Walking and Cycling Strategy	Inconsistent with Strategy	Single pedestrian and cycle route along SH1 unlikely to encourage pedestrians and cyclists between Tinwald and Ashburton
			Ashburton Parking Strategy	Inconsistent with Strategy	Removal of parking on SH1 not supported by strategy
			Regional - RLTS	Inconsistent with Strategy	Lack of alternative route if SH1 unavailable not supported by strategy
			RLTP	Not Inconsistent with Programme	
			CTRIP	Not inconsistent with Plan	
			National - LTMA,	Not inconsistent with Act	
			NLTP	Not inconsistent with Plan	
	Economics		Cost	High cost	4 laning of most of existing SH through Ashburton, possibly high land costs. Potentially high cost of rail crossing if structure required
			Economic Assessment – Benefit / Cost	Low Benefit Cost (High cost and moderate benefit)	Lack of connectivity within Ashburton reduces potential benefits
			Assist Economic Development	Small economic contribution	No improvement in access to Ashburton CBD, businesses in Tinwald, or Ashburton Business Estate. Additional capacity on SH1, improves travel times
			Funding	NZTA funding unlikely	Project would need to meet NZTA funding criteria at time of application. High cost and small benefits make funding unlikely
			Integration with other local projects	Poor integration with local projects	Does not improve links to Business Estate, and to proposed Art Gallery / Museum site
			Use of existing infrastructure	Small use of existing infrastructure	Will use existing infrastructure (SH1) which is near capacity. This will need duplication. Will also use Melcombe St which has excess capacity .
	Risks		Natural Hazards	Minor hazard identified at this time	Passes across stormwater overland flow path on north side. Potential for some redirection of flow path

			Option H – West St to Melcombe St (one way northbound – Existing bridge one way southbound) (contd)		
			Criteria	***Assessment***	***Notes***
			Funding	NZTA funding unlikely	Refer note under economic Factors
			Existing Bridge	Little risk to bridge identified at this time	
	Environmental Impacts		Impacts on Residents (Noise, vibration and disturbance)	Moderate Impact	Existing low volume residential street (Melcombe St) will become SH1. This street has railway on one side, and includes the Tinwald Club Impacts therefore lessened
			Visual Impact – South approach	Moderate impact	Using existing roads. SH1 may require widening at and beyond junction of one way sections
			Visual Impact - River	Minor impact	Bridge will run parallel, and adjacent to existing rail bridge. Will have impact on Riparian margins on both sides of river
			Visual Impact – North Approach	Minor impact	Route passes through existing commercial and industrial land
			Consistency with surrounding environment	Potentially inconsistent	4 laning is not inconsistent with SH1. However potential removal of parking likely to be inconsistent with retail and residential frontages along SH1. SH1 environment inconsistent with current environment on Melcombe St.
			Water Quality (discharge from bridge)	Minor impact	Small discharge from bridge
			Land Impacts	Moderate to high impact	Land potentially required on frontages along SH1 if on street parking to be maintained. Land required at junction between one and two way sections of SH1. Commercial land required between river and Moore St
	Wider Outcomes		Community Outcomes	Little change in community outcomes	
			Social	Some severance in residential areas	Severance effects across SH and Melcombe St
			Public Health (considers air pollution impacts, and impacts of increased active modes such as walking and cycling).	Neutral impacts	Little improvement in environment for pedestrians and cyclists. Little change in air pollution levels

			Option H(1) – West St to Melcombe St		
			Criteria	***Assessment***	***Notes***
Critical Factors	***Access and Mobility***		Personal Safety/Security (considers the extent to which personal safety and security [particularly of pedestrians and cyclists] is able to be enhanced through measures such as public surveillance).	Good personal safety / security	Route within town and provides opportunity for observation on both sides (Melcombe St & West St)
			Mobility (considers the ability of motor vehicles, pedestrians and cyclists to move about the transportation network).	Provides moderate mobility.	4 laned SH1 route through Tinwald and Ashburton will provide good mobility for through traffic Crossing or accessing the route likely to be difficult at non-signalised intersections
			Relationship to existing and future infrastructure and facilities	Uses existing infrastructure on both sides	Relates well to existing east west streets on both sides
			Connectivity	Moderate connectivity	Will provide good north south connectivity, but reduce connectivity across town
			Access especially to key destinations	Provides moderate access	North south and east west routes provide access to most destinations in centre of town. Potentially Poor access for right turn out of East Tinwald. Depending on traffic volumes using Archibald St. No parking likely on SH1 in order to minimise land requirements
			Pedestrian and Cyclist, including access along river	Pedestrian and cyclist access can be provided adjacent to Archibald St	Pedestrian / cyclist facilities on existing bridge & along Archibald St could provide good facility.
			Severance	High severance effects	Significant severance effects due to widening and traffic volumes on SH1
			Route Security	Good route security	Provides viable alternative route should either bridge be unavailable
	Land		Land Acquisition and access	Potential significant land acquisition	Frontages of a number of properties on SH1 likely to be required. Significant additional land likely at junction of SH1 and local road (refer sketch no 3) Some commercial property required at northern side of river. Property required between end of Melcombe St and river
	Engineering- Technical		Road Safety	Neutral impact on road safety	Reduction in traffic on Archibald St would reduce accidents involving right turners from eastern Tinwald. Increase in traffic on Melcombe St would increase accidents involving vehicles to and from western Tinwald
			Relationship with State Highways	Neutral impact on SH	SH1 would be relocated to Melcombe St and new bridge. SH length would remain similar
			Relationship with local roads	Negative impacts on local roads	Melcombe Road will become SH1. Local roads in western Tinwald will have access onto new section of SH1. Local roads in eastern Tinwald will have access onto Archibald St
			Relationship with Railway	Neutral impact on railway	New SH1 rail crossing in Tinwald would replace existing SH1 crossing in Ashburton. New crossing would have superior alignment to existing. Increase in traffic crossing railway in Tinwald, and reduction in Ashburton
			Separation of State Highway and Local traffic	Good separation	Likely to result in significant proportion of local traffic using existing route, and State Highway through traffic using new State Highway
			Geotech	No Geotechnical constraints identified at this time	
			Bridge Structure	No structural constraints identified at this time	
			Secondary Purposes (Utility services etc)	Does not allow alternative back up route between Tinwald and Ashburton for services	

			Option H(1) – West St to Melcombe St (contd)		
			Criteria	***Assessment***	***Notes***
	RMA		Constructability	Potential constructability issues at Carters Tce rail crossing	Existing rail underpass at Carters Tce unsuitable for large vehicles or heavy traffic volumes. Difference in level between railway and road would make a level crossing difficult. Additional cut required to put road under railway. Existing underpass could remain, but has significant height and capacity constraints.
			Consentability	All new road and bridge construction will require full range of consents from Environment Canterbury (RMA s.9, s.13, s.14, s15)	Will require: Aquatic ecology assessment; Terrestrial ecology assessment; River hydraulics / waterway capacity
			District Plan	Existing State Highway is designated. Melcombe St is deemed to be designated All new road connections and new bridge alongside existing will need to be designated. There is a designation for NZ Rail (no 396 on planning map in Appendix K) which may affect the location of the second bridge	Existing State Highway already classified Arterial Road in District Plan Road status of Melcombe St need to be changed from Local Road to State Highway Will require: Traffic impact analysis; Cultural impact assessment; Landscape assessment (bridge location and road connections); Noise impact assessment
	Poliocies, Plans, Strategies		District - Ashburton Transportation Study	Inconsistent with Study recommendations	Widening of sections of SH1 not recommended in Study
			LTCCP	Not inconsistent with Plan	2nd bridge has been identified in LTCCP
			Ashburton District Development Plan	Does not support Development Plan	Does not promote development of east Tinwald as identified for future development in Plan
			Ashburton Town Centre Plan	Not inconsistent with Plan	
			Ashburton Walking and Cycling Strategy	Not inconsistent with Strategy	Possibility of quality pedestrian / cycle link on existing bridge
			Ashburton Parking Strategy	Inconsistent with Strategy	Removal of parking on SH1 not supported by strategy
			Regional - RLTS	Not inconsistent with Strategy	Lack of alternative route if SH1 unavailable not supported by strategy
			RLTP	Not Inconsistent with Programme	
			CTRIP	Not inconsistent with Plan	
			National - LTMA,	Not inconsistent with Act	
			NLTP	Not inconsistent with Plan	
	Economics		Cost	High cost	4 laning of most of existing SH through Ashburton, possibly high land costs.
			Economic Assessment – Benefit / Cost	Low Benefit Cost (High cost and moderate benefit)	Lack of connectivity within Ashburton reduces potential benefits
			Assist Economic Development	Small economic contribution	No improvement in access to Ashburton CBD, businesses in Tinwald, or Ashburton Business Estate. Additional capacity on SH1, improves travel times.
			Funding	NZTA funding unlikely	NZTA is unlikely to fund a new State Highway bridge when existing one serves State Highway purposes adequately. Project would need to meet NZTA funding criteria at time of application to receive NZTA subsidy. High cost and small benefits make funding unlikely.

			Option H(1) – West St to Melcombe St ((contd)		
			Criteria	***Assessment***	***Notes***
			Integration with other local projects	Moderate integration with local projects	Does not improve links to Business Estate. Improved capacity on SH1 likely to improve access to proposed Art Gallery / Museum site
			Use of existing infrastructure	Small use of existing infrastructure	Will use existing infrastructure (SH1) which is near capacity. This will need duplication. Will also use Melcombe St which has excess capacity .
			Funding	NZTA funding unlikely	Refer note under economic Factors
			Existing Bridge	Little risk to bridge identified at this time	
	Environmental Impacts		Impacts on Residents (Noise, vibration and disturbance)	Moderate Impact	Existing low volume residential street (Melcombe St) will become SH1. This street has railway on one side, and includes the Tinwald Club Impacts therefore lessened
			Visual Impact – South approach	Moderate impact	Using existing roads. SH1 may require widening at and beyond junction of one way sections
			Visual Impact - River	Minor impact	Bridge will run parallel, and adjacent to existing rail bridge. Will have impact on Riparian margins on both sides of river
			Visual Impact – North Approach	Minor impact	Route passes through existing commercial and industrial land
			Consistency with surrounding environment	Potentially inconsistent	4 laning is not inconsistent with SH1. However potential removal of parking likely to be inconsistent with retail and residential frontages along SH1. SH1 environment inconsistent with current environment on Melcombe St.
			Water Quality (discharge from bridge)	Minor impact	Small discharge from bridge
			Land Impacts	Moderate to high impact	Land potentially required on frontages along SH1 if on street parking to be maintained. Land required at junction between one and two way sections of SH1. Commercial land required between river and Moore St
	Wider Outcomes		Community Outcomes	Little change in community outcomes	
			Social	Some severance in residential areas	Severance effects across SH, Melcombe St and Archibald St
			Public Health (considers air pollution impacts, and impacts of increased active modes such as walking and cycling).	Neutral impacts	Little improvement in environment for pedestrians and cyclists. Little change in air pollution levels
Note			1. Providing a new local bridge between Melcombe St and West St would be likely to only serve western Tinwald, and result in little reduction in traffic volumes on SH1. The safety and accessibility issues associated with traffic turning right from eastern Tinwald onto SH1 would remain.		

			Option I – Park St to Tarbottons Rd		
			Criteria	***Assessment***	***Notes***
Critical Factors	***Access and Mobility***		Personal Safety/Security (considers the extent to which personal safety and security [particularly of pedestrians and cyclists] is able to be enhanced through measures such as public surveillance).	Good personal safety / security	Route within town and provides opportunity for observation on both sides (Park St and Tarbottons Rd)
			Mobility (considers the ability of motor vehicles, pedestrians and cyclists to move about the transportation network).	Moderate mobility	Park St has high side friction due to vehicles parking and manoeuvring associated with retail area. Tarbottons Rd is currently on the edge of the urban area. It is residential on one side and rural on the other. It would provide good mobility
			Relationship to existing and future infrastructure and facilities	Uses existing infrastructure on both sides	Relates well to existing east west streets on north side, and on northern end of south side
			Connectivity	Poor connectivity	Park St does not connect through the domain to Walnut Ave. Few connections across railway to east Tinwald
			Access especially to key destinations	Provides poor access to most destinations	Indirect access to most destinations in centre of town. Access to north east Ashburton via indirect route (Walnut Ave and Bridge St)
			Pedestrian and Cyclist, including access along river	Will provide poor access between east Tinwald and East Ashburton	Not suitable for pedestrians and cyclists in east of Tinwald. Does not connect to Ashburton River walkway
			Severance	Moderate severance effects	Potentially some severance on Tarbottons Road and Park St especially in residential sections and adjacent to Ashburton Borough and St Josephs Schools. Small traffic volumes likely to use this route mitigate severance effect.
			Route Security	Moderate route security	Will provide viable alternative route should SH1 be unavailable. However, small number of accesses across railway will limit effectiveness of route.
	Land		Land Acquisition and access	privately owned land would be required between the river and the ends of Tarbottons Rd and Park St	Land at end of Park St is commercial land and includes new Warehouse building
	Engineering- Technical		Road Safety	Negative impact on road safety	Small reduction in traffic on SH1 including negligible reduction in traffic right turning onto SH1 at uncontrolled intersections in Tinwald. Constrained nature of Park St in retail area, combined with vehicles parking and manoeuvring likely to result in significant conflict with through traffic and accidents. Potential safety issues at Park St outside schools. Changes to priority at intersections on Park St (to give priority to through traffic) likely to result in short term increase in accidents at those intersections while drivers become familiar with changes
			Relationship with State Highways	Little impact on SH	Linkages with SH via Moore St, Havelock St and Walnut Ave on North side, and via Buckleys Tce and Nixon St on south side Small reduction in local traffic on SH1.
			Relationship with local roads	Poor connection to local roads	Poor connection to local roads on South side. Indirect linkage to Walnut Ave on North side. Adequate linkages to other principal east west local roads on North side (Havelock St & Moore St). Park St provides access and parking for businesses in CBD

			Option I – Park St to Tarbottons Rd (contd)		
			Criteria	***Assessment***	***Notes***
			Relationship with Railway	Likely to result in small reduction in traffic volumes at existing rail crossings	Traffic between West Tinwald and West Ashburton will not need to cross railway twice. Small proportion of Tinwald west of railway, combined with potential congestion and delays on Park St may result in advantage for small numbers .
			Separation of State Highway and Local traffic	Little Separation	Lack of connectivity from Park St, and limited access from east of Tinwald likely to result in route being less desirable for local traffic. Likely to result in small proportion of local traffic using new route, and State Highway through traffic remaining on State Highway
			Geotech	No Geotechnical constraints identified at this time	
			Bridge Structure	No structural constraints identified at this time	
			Secondary Purposes (Utility services etc)	Indirect route to bulk of Tinwald	
			Constructability	No constructability issues identified at this time	
	RMA		Consentability	All new road and bridge construction will require full range of consents from Environment Canterbury (RMA s.9, s.13, s.14, s15)	Will require: Aquatic ecology assessment; Terrestrial ecology assessment; River hydraulics / waterway capacity Potential contaminated land through existing industrial area(?)
			District Plan	Park St and Tarbottons Rd both deemed to be designated in the District Plan. All new road connections and new bridge will need to be designated	Road status of both Park St and Tarbottons Rd need to be changed from Local Road to Principal Road (or Arterial) Will require: Traffic impact analysis; Cultural impact assessment; Landscape assessment (bridge location and road connections); Noise impact assessment
	Policies, Plans, Strategies		District - Ashburton Transportation Study	Inconsistent with Study recommendations	Route through business area not recommended in Study
			LTCCP	Not inconsistent with Plan	2nd bridge has been identified in LTCCP
			Ashburton District Development Plan	Inconsistent with Plan	Does not provide linkages to area of Tinwald identified for future development in Plan
			Ashburton Town Centre Plan	Not Inconsistent with Plan	
			Ashburton Walking and Cycling Strategy	Inconsistent with Strategy	Does not provide alternative route for pedestrians & cyclists between east Tinwald and Ashburton
			Ashburton Parking Strategy	Not inconsistent with Strategy	
			Regional - RLTS	Not inconsistent with Strategy	
			RLTP	Not Inconsistent with Programme	
			CTRIP	Not inconsistent with Plan	
			National - LTMA,	Not inconsistent with Act	
			NLTP	Not inconsistent with Plan	
	Economics		Cost	High cost	Based on using existing roads on both north and south side of river. Upgrades needed on Tarbottons Rd. Significant business land required, likely to include new Warehouse building
			Economic Assessment – Benefit / Cost	Low Benefit Cost (high cost and low benefit)	Congestion, delays and safety issues on Park St

			Option I – Park St to Tarbottons Rd (contd)		
			Criteria	***Assessment***	***Notes***
			Assist Economic Development	Small economic contribution	Provides poor access to Ashburton CBD, poor access to businesses in Tinwald, poor access to Ashburton Business Estate. Small reduction in local traffic on SH1, thereby little improvement in travel times for through traffic
			Funding	NZTA funding unlikely	Project would need to meet NZTA funding criteria at time of application. Large disbenefits make funding unlikely
			Integration with other local projects	Poor integration with local projects	Difficulty getting through CBD results in poor links to Business Estate, and to proposed Art Gallery / Museum site
			Use of existing infrastructure	Moderate use of existing infrastructure	Extensive use of existing roads on both sides
	Risks		Natural Hazards	No natural hazards identified at this time	
			Funding	NZTA funding unlikely	Refer note under economic Factors
			Existing Bridge	Little risk to bridge identified at this time	
	Environmental Impacts		Impacts on Residents (Noise, vibration and disturbance)	Moderate Impact	Will increase volume on low capacity, residential roads (north side – north of CBD), and on low volume moderate capacity local roads (south side)
			Visual Impact – South approach	Minor impact	Little change to Tarbottons Rd (existing road). Some impact on land between Carters Tce and river
			Visual Impact - River	Moderate Impact	Impact of bridge across river – visible to people in urban area of Ashburton
			Visual Impact – North Approach	Minor Impact	Some impact on industrial area
			Consistency with surrounding environment	Inconsistent	Through traffic volumes will increase on Park street, including an area of parking outside shopping area, and area adjacent to Ashburton Borough and St Josephs Schools, and on local low volume roads (Tarbotton Rd)
			Water Quality (discharge from bridge)	Minor impact	Small discharge from bridge
			Land Impacts	Significant impact	Impact on land required on both approaches between river end of Park St and Tarbottons Rd
	Wider Outcomes		Community Outcomes	Few community benefits, some disbenefits	Small reduction in traffic on existing SH1. Offset by increase in traffic on Park St and Tarbottons Rd. Increase in traffic on Park St outside Schools
			Social	Poor linkages within Ashburton. Some severance in residential areas	Poor linkages between communities of north and south Ashburton. Some severance effects in residential area around Park Street
			Public Health (considers air pollution impacts, and impacts of increased active modes such as walking and cycling).	Negative impacts	Provides improved environment for pedestrians. Offset by poor environment for cyclists. Potential increase in pollution due to increased stop start traffic through business area

			Option J – Oak Grove to West of Tinwald		
			Criteria	***Assessment***	***Notes***
Critical Factors	***Access and Mobility***		Personal Safety/Security (considers the extent to which personal safety and security [particularly of pedestrians and cyclists] is able to be enhanced through measures such as public surveillance).	Moderate Personal Safety / Security	Route is outside of town and provides limited opportunity for observation on South side. It is within town on North side. However distance from town makes it unlikely to be used by pedestrians or cyclists therefore lack of observation not a major issue
			Mobility (considers the ability of motor vehicles, pedestrians and cyclists to move about the transportation network).	Moderate mobility	Provides poor mobility for SH through traffic. Provides adequate mobility for local traffic
			Relationship to existing and future infrastructure and facilities	Moderate use of existing infrastructure	Uses existing infrastructure on North side. Does not relate with existing infrastructure on South side
			Connectivity	Little connectivity	Outside of town on south side. Does not connect town well
			Access especially to key destinations	Little access to destinations in town	Good access to hospital, links to Walnut Ave. Does not link well to bulk of Tinwald
			Pedestrian and Cyclist, including access along river	Little access for pedestrians and cyclists to destinations in town	Not likely to be desirable route for pedestrians and cyclists due to distance from town. Does not link to Ashburton River walkway
			Severance	Route causes little severance. However does not address existing severance issues of SH1.	Likely to result in little traffic reduction on SH1 traffic
			Route Security	Good route security	Will provide viable alternative route should SH1 be unavailable
	Land		Land Acquisition and access	Privately owned rural land would be required on the South approaches	
	Engineering- Technical		Road Safety	Little impact on road safety	Small change in traffic numbers likely on new route, and associated small reduction on SH1. Unlikely to reduce numbers of vehicles turning right or crossing SH1 in Tinwald
			Relationship with State Highways	Good linkages with SH via Moore St, Havelock St and Walnut Ave on North side. Costly to provide linkages on South side	
			Relationship with local roads	Poor connection to local roads on South side. Linkages to principal local roads on North side	Oak Grove, Moore St, Havelock Street, and Walnut Ave are high volume principal local roads
			Relationship with Railway	Likely to result in little change in traffic volumes at existing rail crossings	
			Separation of State Highway and Local traffic	Likely to result in little change in composition of SH traffic	
			Geotech	No Geotechnical constraints identified at this time	
			Bridge Structure	No structural constraints identified at this time	
			Secondary Purposes (Utility services etc)	Little connection to services on South side	
			Constructability	No constructability issues identified at this time	
	RMA		Consentability	All new road and bridge construction will require full range of consents from Environment Canterbury (RMA s.9, s.13, s.14, s15)	Will require: Aquatic ecology assessment; Terrestrial ecology assessment; River hydraulics / waterway capacity; Groundwater risk report

			Option J – Oak Grove to West of Tinwald (contd)		
			Criteria	***Assessment***	***Notes***
			District Plan	Oak Grove is deemed to be designated in the District Plan. Connection from Oak Grove Road, bridge crossing location, and connecting roads across Greenfields will need to be designated	Road status Oak Grove already classed as Principal Road. Will require: Traffic impact analysis; Cultural impact assessment; Landscape assessment (bridge location and road connections); Noise impact assessment
	Policies, Plans, Strategies		District - Ashburton Transportation Study	Inconsistent with Study recommendations	Route on western side of Ashburton not recommended in Study
			LTCCP	Not inconsistent with Plan	2nd bridge has been identified in LTCCP
			Ashburton District Development Plan	Inconsistent with Plan	Does not provide linkages to area of Tinwald identified for future development in Plan
			Ashburton Town Centre Plan	Not Inconsistent with Plan	
			Ashburton Walking and Cycling Strategy	Inconsistent with Strategy	Does not provide alternative route for pedestrians & cyclists between east Tinwald and Ashburton
			Ashburton Parking Strategy	Not inconsistent with Strategy	
			Regional - RLTS	Not inconsistent with Strategy	
			RLTP	Not Inconsistent with Programme	
			CTRIP	Not inconsistent with Plan	
			National - LTMA,	Not inconsistent with Act	
			NLTP	Not inconsistent with Plan	
	Economics		Cost	High cost	Based on using existing roads on north side of river. Significant areas of business land required between Oak Grove and river. Rural land required for south side approaches
			Economic Assessment – Benefit / Cost	Low Benefit Cost (high cost and low benefit)	Little traffic likely to use route
			Assist Economic Development	Small economic contribution	Provides poor access to Ashburton CBD, poor access to businesses in Tinwald, poor access to Ashburton Business Estate. Small reduction in local traffic on SH1, thereby little improvement in travel times for through traffic
			Funding	NZTA funding unlikely	Project would need to meet NZTA funding criteria at time of application. Large disbenefits make funding unlikely
			Integration with other local projects	Moderate integration with local projects	North side links wells to Business Estate, and to proposed Art Gallery / Museum site. However, south side does not link well to bulk of Tinwald
			Use of existing infrastructure	Moderate use of existing infrastructure	New road construction on South side. Extensive use of existing roads on north side
	Risks		Natural Hazards	Significant hazard identified	Passes across stormwater overland flow path on north side
			Funding	NZTA funding unlikely	Refer note under economic Factors
			Existing Bridge	Little risk to bridge identified at this time	

			Option J – Oak Grove to West of Tinwald (contd)		
			Criteria	***Assessment***	***Notes***
	Environmental Impacts		Impacts on Residents (Noise, vibration and disturbance)	Moderate Impact	Will increase volume on moderate volume, high capacity local roads (north side). Will require new roads (south side)
			Visual Impact – South approach	Moderate impact	Change from open rural land to Principal local road.
			Visual Impact - River	Moderate Impact	Impact of bridge across river – visible to people in urban area of Ashburton
			Visual Impact – North Approach	Minor Impact	Some impact on parkland at end of Oak Grove. Little impact on Oak Grove
			Consistency with surrounding environment	Moderate impact	Traffic volumes will increase on Principal local roads which have adequate capacity to carry increased traffic (Oak Grove, Moore St, Havelock St, Walnut Ave). A new principal road through undeveloped land in Tinwald will be inconsistent with the current environment
			Water Quality (discharge from bridge)	Minor impact	Small discharge from bridge
			Land Impacts	Moderate impact	Impact on rural land on south approaches
	Wider Outcomes		Community Outcomes	Provides few community benefits	Small reduction in traffic on existing SH1
			Social	Limits linkages within Ashburton	
			Public Health (considers air pollution impacts, and impacts of increased active modes such as walking and cycling).	Neutral	Small benefits in reduction in air pollution in town. Small disbenefits in not encouraging walking and cycling

			Option K – Western Bypass		
			Criteria	***Assessment***	***Notes***
Critical Factors	***Access and Mobility***		Personal Safety/Security (considers the extent to which personal safety and security [particularly of pedestrians and cyclists] is able to be enhanced through measures such as public surveillance).	Moderate Safety / Security	Route is outside of town and provides limited opportunity for observation. However distance from town makes it unlikely to be used by pedestrians or cyclists therefore lack of observation not a major issue
			Mobility (considers the ability of motor vehicles, pedestrians and cyclists to move about the transportation network).	Provides good mobility for SH through traffic. Provides small improvement in mobility for local traffic from small reduction in traffic on SH1	Length of detour required for SH traffic likely to result in small numbers using route
			Relationship to existing and future infrastructure and facilities	Poor relationship to existing facilities in town	
			Connectivity	Poor connectivity within town	
			Access especially to key destinations	Provides little access to destinations within town	
			Pedestrian and Cyclist, including access along river	Unlikely to be used by pedestrians and cyclists	High speed road remote from town
			Severance	Route will result in little additional severance	Reduction in traffic on existing SH1 will slightly reduce severance within town. New road will result in some additional severance within community
			Route Security	Good route security	Will provide viable alternative route should SH1 be unavailable. However, small number of accesses across railway will limit effectiveness of route
	Land		Land Acquisition and access	Route will require extensive private rural land	Assumes route in "green fields". If following existing local roads less land required.
	Engineering- Technical		Road Safety	Small impact on road safety	Well designed new alignment will provide safe environment for SH1 through traffic. Small reduction in traffic on existing SH1 route will result in small improvement in safety on that route
			Relationship with State Highways	Route will become new SH1	Assumes good linkages at either end, and that proposal acceptable to NZTA
			Relationship with local roads	Will connect with few local roads	
			Relationship with Railway	Little change in impact on railway	Similar volume of traffic crossing railway, possibly at different locations
			Separation of State Highway and Local traffic	Removes some SH1 through traffic from local network	Existing SH1 likely to become local road but still carry significant proportion of SH traffic
			Geotech	No Geotechnical constraints identified at this time	
			Bridge Structure	No structural constraints identified at this time	
			Secondary Purposes (Utility services etc)	Limited ability to carry local utilities	Does not link to local services
			Constructability	No constructability constraints identified at this time	
	RMA		Consentability	Bridge and new road construction will require full range of consents from Environment Canterbury (RMA s.9, s.13, s.14, s15)	Will require: Aquatic ecology assessment; Terrestrial ecology assessment; River hydraulics / waterway capacity; Groundwater risk report
			District Plan	Any local roads used for route deemed to be designated in District Plan Bridge crossing location and connecting roads across Greenfields will need to be designated	Road status of Oak Grove already classed as Principal Road. Will require: Traffic impact analysis; Cultural impact assessment; Landscape assessment (bridge location and road connections)
	Policies, Plans, Strategies		District - Ashburton Transportation Study	Inconsistent with Study recommendations	Route to west of town not recommended in study
			LTCCP	Not inconsistent with Plan	2nd bridge has been identified in LTCCP
			Ashburton District Development Plan	Does not support Development Plan	Does not provide linkages to areas of development in Plan
			Ashburton Town Centre Plan	Inconsistent with Plan	Likely to result in businesses wishing to relocate to near to bypass
			Ashburton Walking and Cycling Strategy	Not inconsistent with Strategy	

			Option K – Western Bypass (contd)		
			Criteria	***Assessment***	***Notes***
			Ashburton Parking Strategy	Not inconsistent with Strategy	
			Regional - RLTS	Inconsistent with Strategy	
			RLTP	Not Inconsistent with Programme	
			CTRIP	Inconsistent with Plan	CTRIP does not consider a full bypass of Ashburton
			National - LTMA,	Not inconsistent with Act	
			NLTP	Not inconsistent with Plan	
	Economics		Cost	High cost	Based on cost new road to SH standards , including extensive land acquisition
			Economic Assessment – Benefit / Cost	Low Benefit Cost (Higher cost and smaller benefit)	Small number of users results in small user benefits
			Assist Economic Development	Little overall economic contribution	Some economic benefits for SH1 users. However, removal of through trade likely to have negative impacts on Ashburton businesses
			Funding	NZTA funding unlikely	High cost and smaller BCR
			Integration with other local projects	Little integration	Does not relate to local projects at all
			Use of existing infrastructure	Minimal use of existing infrastructure	May be able to us existing local road alignments. Likely to require extensive reconstruction to bring to SH standards
	Risks		Natural Hazards	Significant hazard identified	Passes across stormwater overland flow path on north side
			Funding	NZTA funding unlikely	
			Existing Bridge	Little risk to bridge identified at this time	
	Environmental Impacts		Impacts on Residents (Noise, vibration and disturbance)	Moderate Impact	Will include new national State Highway on existing rural land. Significant impact on a small number of residents
			Visual Impact – South approach	Moderate impact	Change from open rural land to national State Highway
			Visual Impact - River	Moderate Impact	Will have impact on Riparian margins on both sides of river visible to small numbers of people
			Visual Impact – North Approach	Moderate Impact	Impact of change from low volume rural roads to national State Highway
			Consistency with surrounding environment	Major impact	New SH not consistent with surroundings
			Water Quality (discharge from bridge)	Minor impact	Small discharge from bridge
			Land Impacts	Major impact	Impact on land surrounding new SH
	Wider Outcomes		Community Outcomes	Provides few community benefits	Small reduction in traffic on existing SH1
			Social	Limits linkages within Ashburton	
			Public Health (considers air pollution impacts, and impacts of increased active modes such as walking and cycling).	Neutral	Small benefits in reduction in air pollution in town. Small disbenefits in not encouraging walking and cycling
			Constructability	Constructability difficult at Carters Tce rail crossing	Existing rail underpass at Carters Tce unsuitable for large vehicles or heavy traffic volumes. Difference in level between railway and road would make a level crossing difficult. Additional cut required to put road under railway. Would pose difficulty for over dimension loads accessing Tinwald

Bill Rice

From: Christine Parkes [christine.parkes@opus.co.nz]
Sent: Wednesday, 14 July 2010 15:00
To: 'Bill Rice'
Subject: Ashburton 2nd Bridge Crossing - Geotech Stage 2
Attachments: image001.jpg; extract from Mitchell 1980 report.pdf

Bill,

As requested a more detailed desk study has been undertaken for the Ashburton Second Bridge on the south side of the Ashburton River. This included liaising with Andrew Broughton (Opus Environment), Bevan Sandison (Opus Timaru), Dave Jenkinson (Opus Timaru) and Robin Jenkinson (ACL Contracting Timaru). Andrew provided a copy of a report he had for the Ashburton area: History of The Ashburton – Hinds Drainage District (Mitchell 1980). In addition a library search has been undertaken for subsurface records in the Ashburton area.

Discussion with the various people as listed above, confirmed there are poor soils in the area near surface. However, the depth to "good" ground was not known.

The report compiled by Mitchell is a summary of work in the Ashburton – Hinds Drainage District, which included some test bores that were drilled in the 1940's between the Ashburton and Hinds Rivers to the southeast of the railway (and current SH1). Based on the comments in the report, and the broad classification that was included for each borehole I have inferred the subsurface conditions as follows:

0 – 1.0 m surface soils and clay, typically saturated

1.0m – depth gravels, some tightly bound with clay resulting in an impervious deposit (so the surface doesn't drain).

Interbedded with free gravels (inferred to be free draining) and sand layers at various depths (water levels in bores dropped when these deposits were encountered).
In some locations the gravels are shallower, and results in near surface springs.

The relevant extracts of the report are attached.

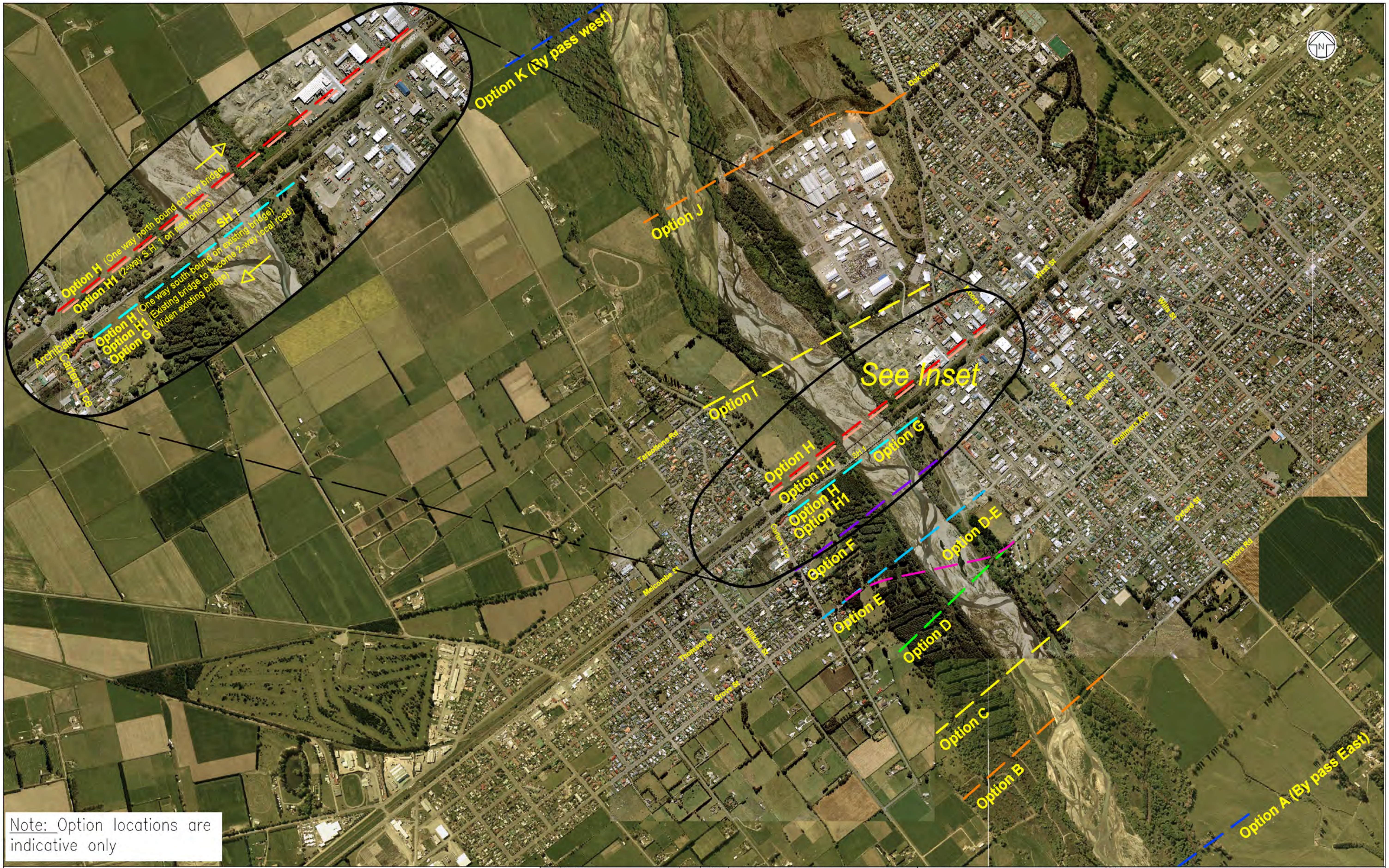
The library search did not provide any additional information, and references from the Mitchell report relating to the original ground investigations were unable to be sourced.

The above findings are not inconsistent with the earlier findings from the Dec 2009 desk study, except to highlight that there are poor shallow soils (<1m) and potentially perched groundwater levels on the south side of the river. This will have implications for pavement design, however does not change any of the recommendations from the desk study report with respect to the bridge.

Further investigation is recommended to confirm the ground conditions inferred from the desk study (and resulting design implications) along the line of the preferred route(s).

Regards,
Christine

Christine Parkes
Senior Engineering Geologist
Opus International Consultants Ltd
christine.parkes@opus.co.nz
Tel +64 3 363 5579, Fax +64 3 365 7858
http://www.opus.co.nz
20 Moorhouse Avenue, PO Box 1482, Christchurch, New Zealand



Note: Option locations are indicative only

Revision	Amendment	Approved	Revision Date
R1.	Options H1 added.		01/10

Ashburton District Council

OPUS
Christchurch Civil
P O Box 1482
Christchurch 8140, New Zealand
+ 64 3 363 5400

Drawn	Designed	Approved	Revision Date
AJM	AJM	BR	01/10

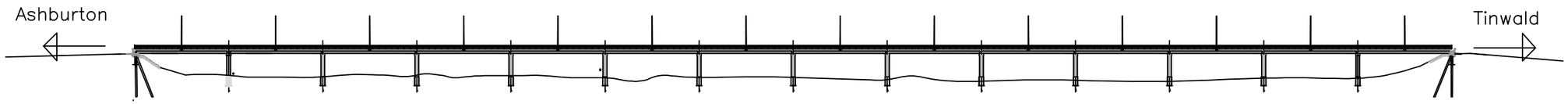
Project No.	Scale
6-DHLN8.00	NTS

Project
ASHBURTON DISTRICT COUNCIL
2ND CROSSING OF ASHBURTON RIVER
TINWALD-ASHBURTON

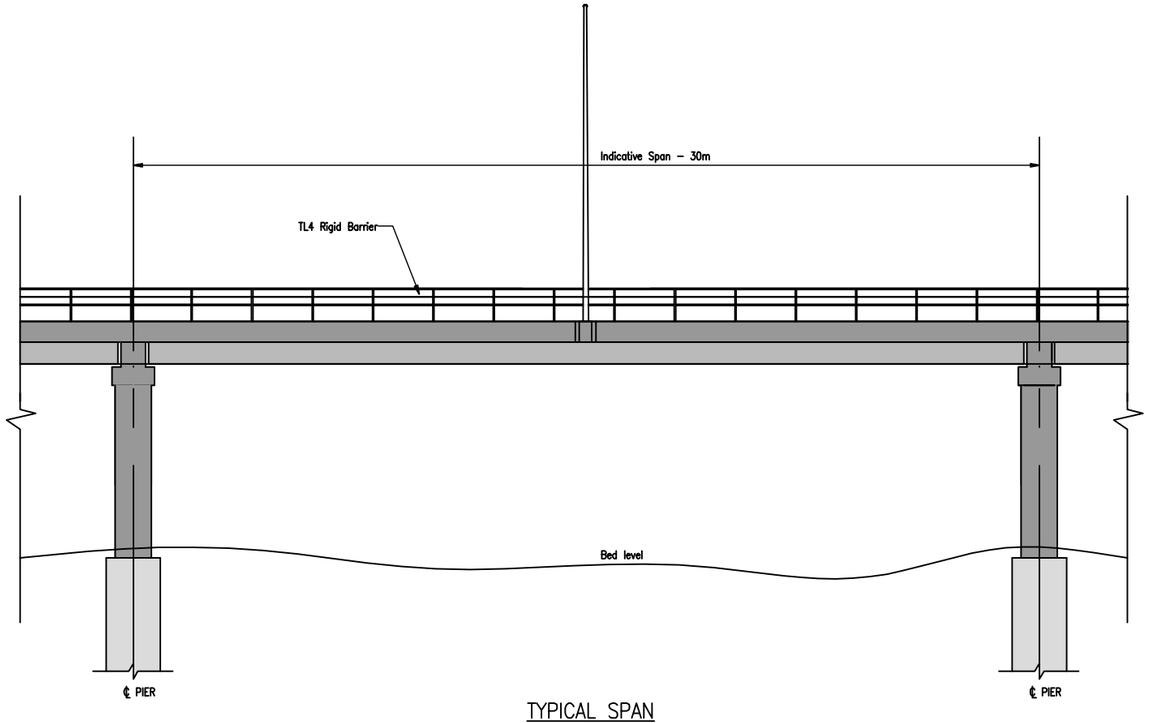
Sheet
OPTIONS CONSIDERED

Drawing No.	Sheet No.	Revision
6-619-114-1604	1	R1

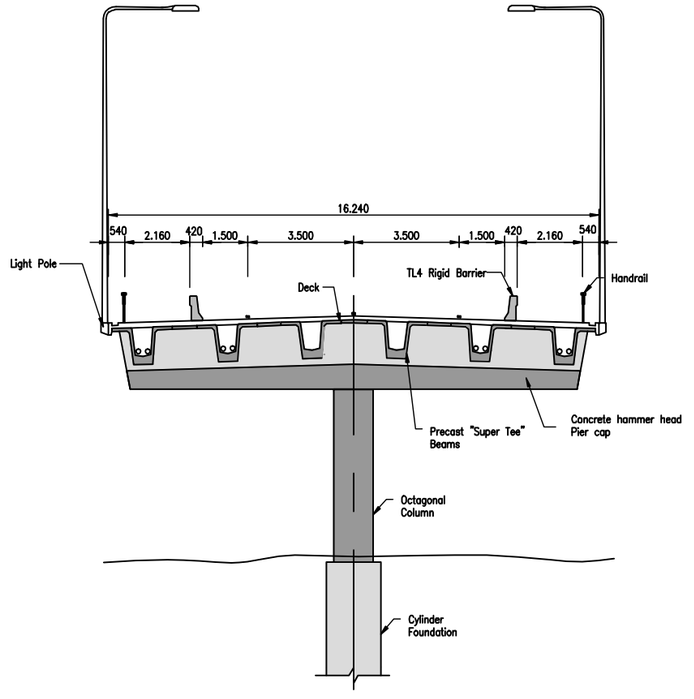
Original Sheet Size A1 [841x594] Plot Date



BRIDGE ELEVATION
1:1500



TYPICAL SPAN
1:200



POSSIBLE CROSS SECTION
1:200

DRAFT

1:200 @ A3
0 2 4 6 8 m

Ashburton District Council

OPUS
Christchurch Civil
P O Box 1482
Christchurch 8140, New Zealand
+64 3 363 5400

Drawn	Designed	Approved	Revision Date
AJM	JR	BR	11/09

Project
ASHBURTON DISTRICT COUNCIL
2ND CROSSING OF ASHBURTON RIVER
TINWALD-ASHBURTON

Sheet
TYPICAL BRIDGE LAYOUT

Project No.	Scale	Drawing No.	Sheet. No.	Revision
6-DHLN-8.00	1:1500 & 1:200	6-619-114-1604	2	R0

Original Sheet Size A3 [420x297] Plot Date 11/12/09 @ 12:22 g:\ashburtn.dir\6-dhlnb.00 ashburton 2nd bridge designation\drawings\6_619_114_1604_1-3-option h.dwg - 2

DESIGN PARAMETERS			
	AS SHOWN	MINIMUM DESIGN	DESIRED DESIGN
Railway track approach angle	60°	60°	85-105°
Railway track approach straight	10m	0m	70m
Roadway arrival and departure radius	130m	110m	220m
Superelevation	5%	6%	3%
Design speed	60 km/h	60 km/h	60 km/h

DRAFT

1:5000 @ A3
0 50 100 150 200 m

Ashburton District Council

OPUS
Christchurch Civil
P O Box 1482
Christchurch 8140, New Zealand
+64 3 363 5400

Drawn	Designed	Approved	Revision Date
AJM	AJM	BR	11/09

Project
ASHBURTON DISTRICT COUNCIL
2ND CROSSING OF ASHBURTON RIVER
TINWALD-ASHBURTON

Sheet
OPTION - H
LAYOUT PLAN

Project No.	Scale	Drawing No.	Sheet No.	Revision
6-DHLN-8.00	1:5000	6-619-114-1604	3	R0

Original Sheet Size A3 [420x297] Plot Date 17/11/09 @ 10:44 g:\ashburtn.dc\6-dhlnb.00 ashburton 2nd bridge designation\drawings\6_619_114_1604_10-15-option g.dwg - 10

DESIGN PARAMETERS			
	AS SHOWN	MINIMUM DESIGN	DESIRED DESIGN
Railway track approach angle	60°	60°	85-105°
Railway track approach straight	10m	0m	70m
Roadway arrival and departure radius	130m	110m	220m
Superelevation	5%	6%	3%
Design speed	60 km/h	60 km/h	60 km/h

DRAFT

1:5000 @ A3

0 50 100 150 200 m

Ashburton District Council

OPUS

Christchurch Civil
P O Box 1482
Christchurch 8140, New Zealand
+64 3 363 5400

Drawn	Designed	Approved	Revision Date
AJM	AJM	BR	02/10

Project
ASHBURTON DISTRICT COUNCIL
2ND CROSSING OF ASHBURTON RIVER
TINWALD-ASHBURTON

Sheet
OPTION - H1
LAYOUT PLAN

Project No.	Scale	Drawing No.	Sheet No.	Revision
6-DHLN-8.00	1:5000	6-619-114-1604	4	R0

Original Sheet Size A3 [420x297] Plot Date 17/11/09 @ 10:44 g:\ashburtn.dc\6-dhlnb.00 ashburton 2nd bridge designation\drawings\6_619_114_1604_10-15-option g.dwg - 10

CONCEPT

ONLY

TINWALD

ASHBURTON

Laings Rd

Grahams Road

Gartarton Rd

Seafield Road

Trevors Road

Beach Road

Wakanui Road

LEGEND

Omitted for clarity

- Bypass - Fairton to Winslow
- Bypass - Seafield Road to Laings Road
- Chalmers Avenue to east of Tinwald - Rural
- Chalmers Avenue to east of Tinwald - Urban
- Chalmers Ave to Grove Street
- Melcombe Street Rail Level Crossing
- Melcombe Street Rail Overpass
- S.H. 1 West St & Archibald St 4 Laning

1:10000 @ A1

0 100 200 300 400 500 600 700 800 900 1000 m

OPTION ALIGNMENT LAYOUTS

CONCEPT ONLY

SH 1

TINWALD

ASHBURTON

SH 1

Winslow Willowby Road

Longbeach Road

Fords Road

Boundary Road

Grahams Road

Ashburton River

Beach Road

Wakanui Road

Cochranes Road

Hoattens Road

Seafield Road

Singletree Road

Fairfield Road

LEGEND

BYPASS OPTION - FAIRTON TO WINSLOW

New road

Existing road to be upgraded to State Highway

Revision	Amendment	Approved	Revision Date

Ashburton District Council

OPUS

Christchurch Civil
P O Box 1482
Christchurch 8140, New Zealand
+64 3 363 5400

Drawn	Designed	Approved	Revision Date
F.S.	F.S.	B.R.	07/10

Project No.	Scale
6-DHLNB.00	1:25000@A1, 1:50000@A3

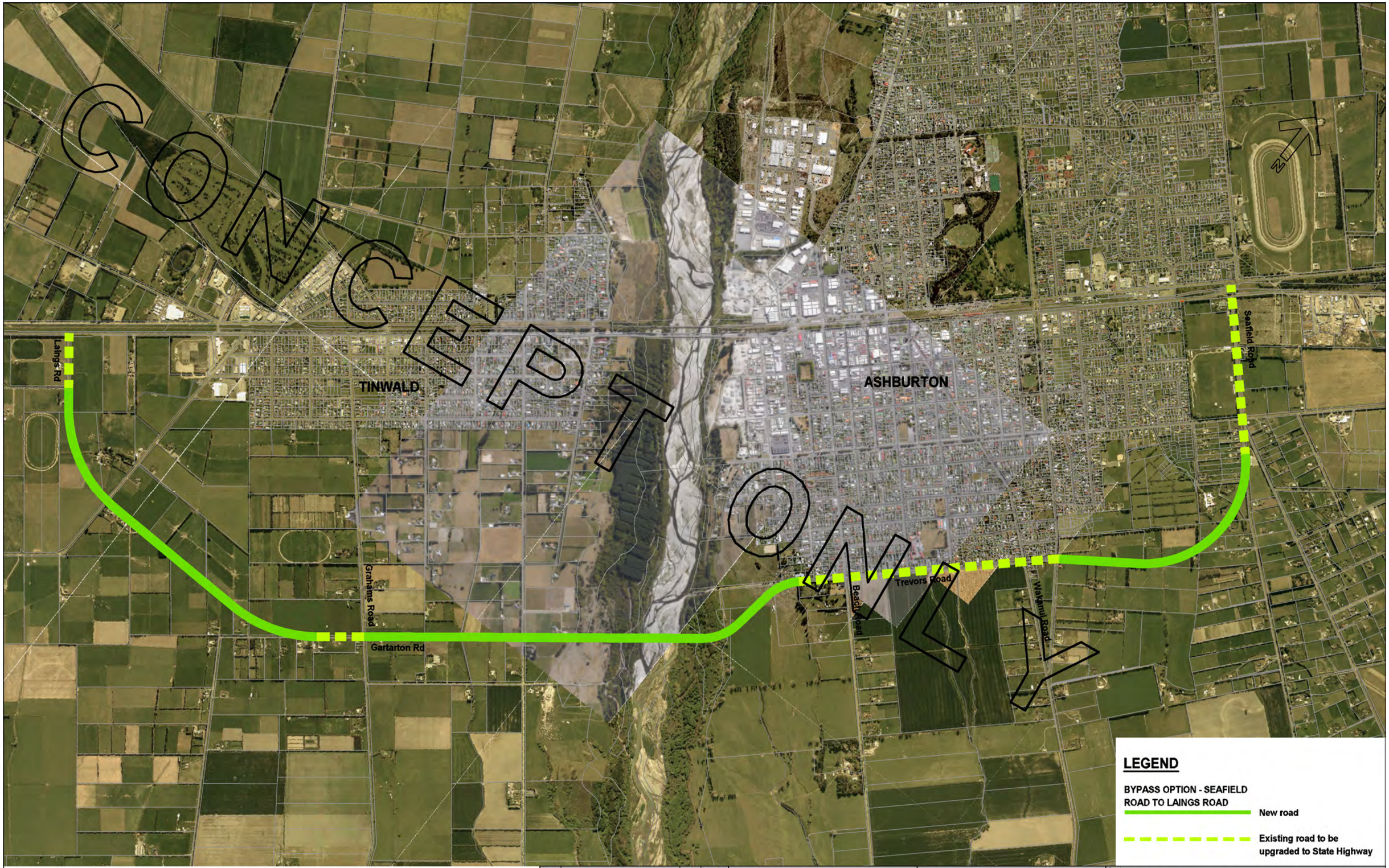
Project
ASHBURTON DISTRICT COUNCIL
2ND CROSSING OF ASHBURTON RIVER
TINWALD - ASHBURTON

Sheet
BYPASS OPTION - FAIRTON TO WINSLOW
ALIGNMENT LAYOUT

Drawing No.	Sheet No.	Revision
6-619-114-5604	140	R0

1:25000 @ A1
0 400 800 1200 1600 2000 2400 m

Original Sheet Size A1 [841x594] Plot Date 23/07/10 @ 09:37 g:\ashburtn.dc\6-dhlnb.00 ashburton 2nd bridge designation\drawings\6_619_114_1604_xoption a-bypass.dwg - Layout1



1:10000 @ A1 — 0 100 200 300 400 500 600 700 800 900 1000 m

Revision	Amendment	Approved	Revision Date

Ashburton District Council

OPUS
Christchurch Civil
P O Box 1482
Christchurch 8140, New Zealand
+64 3 363 5400

Drawn	Designed	Approved	Revision Date
F.S.	F.S.	B.R.	07/10

Project: ASHBURTON DISTRICT COUNCIL
2ND CROSSING OF ASHBURTON RIVER
TINWALD - ASHBURTON

Sheet: BYPASS OPTION - SEAFIELD ROAD TO LAINGS ROAD ALIGNMENT LAYOYT

Project No.	Scale	Drawing No.	Sheet No.	Revision
6-DHLNB.00	1:10000@A1, 1:20000@A3	6-619-114-5604	145	R0

Original Sheet Size A1 [841x594] Plot Date 23/07/10 @ 09:37 g:\ashburtn.dc\6-dhlnb.00 ashburton 2nd bridge designation\drawings\6_619_114_1604_xoption a-bypass.dwg - Layout1

RES C
RES D
RES D
RES D
RES D
RES D
Grahams Rd
Johnstone St
Wilkins Rd
Carters Tce
Grove St
Chalmers Ave
South St
Wilkins Rd
Carters Tce

Revision	Amendment	Approved	Revision Date

Ashburton District Council

OPUS
Christchurch Civil
P O Box 1482
Christchurch 8140, New Zealand
+ 64 3 363 5400

Drawn	Designed	Approved	Revision Date
F.S.	F.S.	B.R.	03/10

Project No.	Scale
6-DHLNB.00	1:5000@A1, 1:10000@A3

Project
ASHBURTON DISTRICT COUNCIL
2ND CROSSING OF ASHBURTON RIVER
TINWALD - ASHBURTON

Sheet
URBAN OPTION - CHALMERS AVE TO EAST OF TINWALD
ALIGNMENT LAYOUT

Drawing No.	Sheet No.	Revision
6-619-114-5604	150	R0

1:5000 @ A1 0 50 100 150 200 250 300 350 400 450 500 m

Original Sheet Size A1 [841x594] Plot Date

1:5000 @ A1 — 0 50 100 150 200 250 300 350 400 450 500 m

Original Sheet Size A1 [841x594] Plot Date

Revision	Amendment	Approved	Revision Date

Ashburton District Council

OPUS
Christchurch Civil
P O Box 1482
Christchurch 8140, New Zealand
+ 64 3 363 5400

Drawn	Designed	Approved	Revision Date
F.S.	F.S.	B.R.	03/10

Project
ASHBURTON DISTRICT COUNCIL
2ND CROSSING OF ASHBURTON RIVER
TINWALD - ASHBURTON

Sheet
OPTION D1
PRELIMINARY LAYOUT PLAN

Project No.	Scale	Drawing No.	Sheet No.	Revision
6-DHLNB.00	1:5000@A1, 1:10000@A3	6-619-114-1604		R0

DESIGN PARAMETERS							
	AS SHOWN	MINIMUM DESIGN	DESIRED DESIGN				
Railway track approach angle	70°	60°	85-105°				
Railway track approach straight	70m	0m	70m				
CURVE 1				CURVE 3			
Radius	320m	155m	320m	Radius	370m	320m	600m
Superelevation	3%	6%	3%	Superelevation	5%	6%	3%
Design speed	70 km/h	70 km/h	70 km/h	Design speed	85 km/h	85 km/h	85 km/h
CURVE 2				CURVE 4			
Radius	185m	155m	320m	Radius	650m	550m	1100m
Superelevation	5%	6%	3%	Superelevation	5%	6%	3%
Design speed	70 km/h	70 km/h	70 km/h	Design speed	100 km/h	100 km/h	100 km/h

1:5000 @ A3

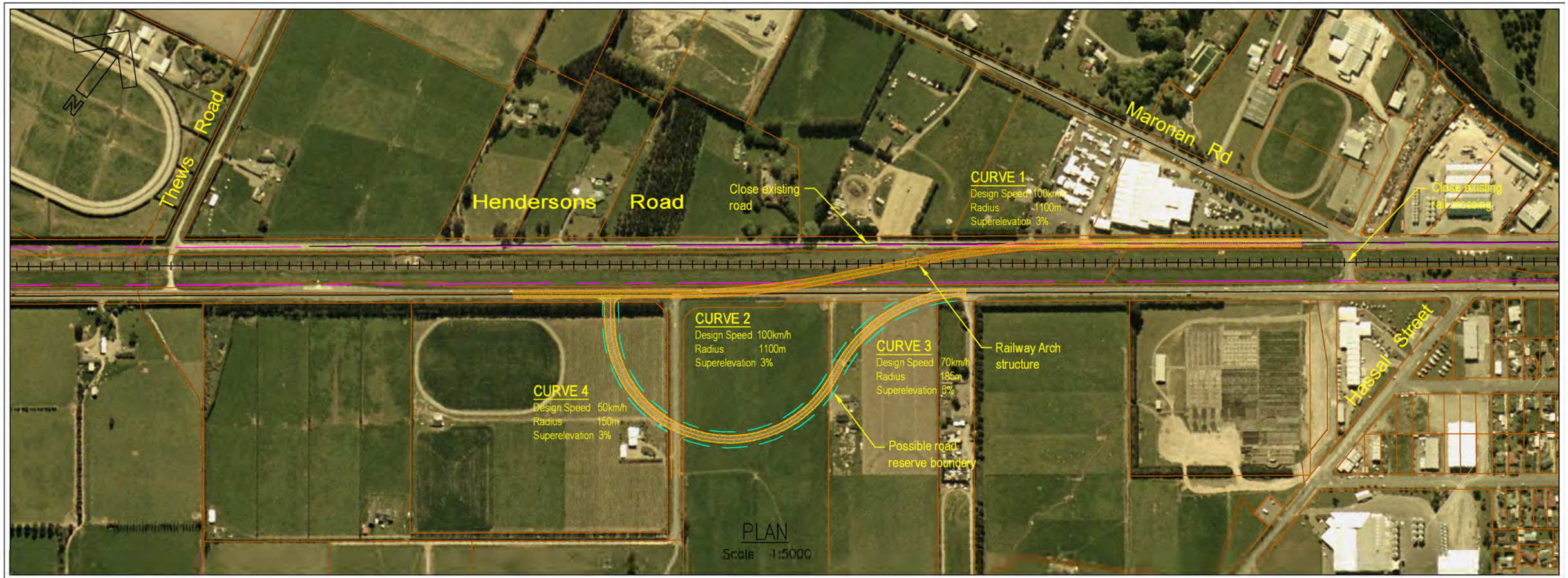
0 50 100 150 200 m

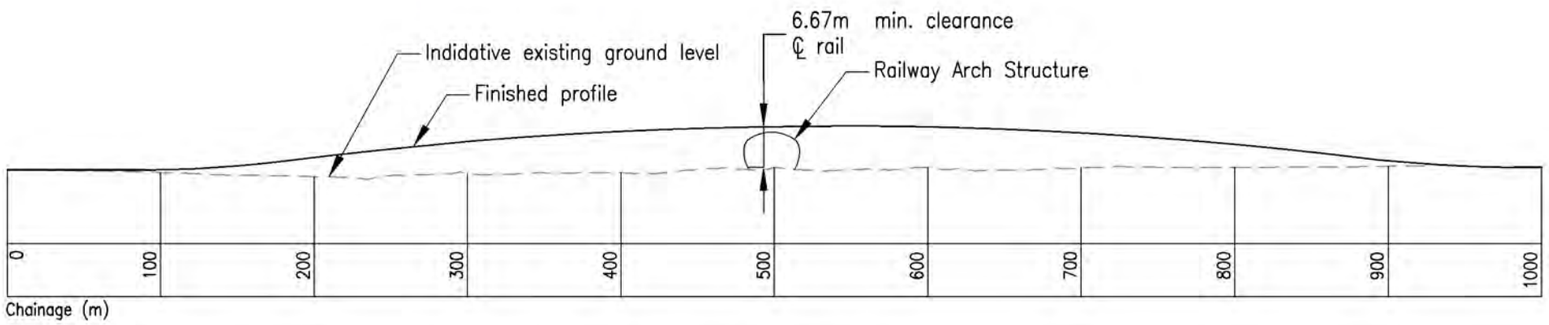
SKETCH 1

1:5000 @ A3

0 50 100 150 200 m

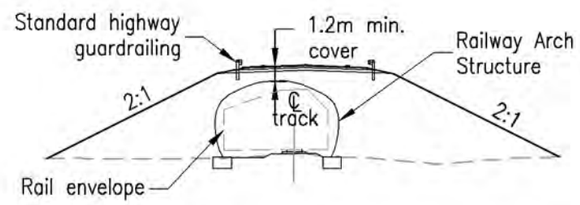
SKETCH 2





LONGITUDINAL SECTION

Hz scale 1:4000
Vt scale 1:1000



TYPICAL SECTION THROUGH GRADE SEPARATED RAILWAY CROSSING

Scale 1:500

1:5000 @ A3
0 50 100 150 200 m

SKETCH 3

ASHBURTON DISTRICT COUNCIL

2nd Bridge Additional Investigation

Option Assessment - February 2011

INDEX **Page**

Outer Bypass	1
Inner Bypass	3
Chalmers Ave to East of Tinwald - Rural	5
Chalmers Ave to East of Tinwald - Urban	9
Chalmers Ave to Grove Street	13
Melcombe Street - Level Crossing	17
Melcombe Street - Rail Overpass	21
4 Laning SH1	25
Tinwald Traffic Signals	27
Summary	29

Ashburton 2nd Bridge Additional Investigation Option Assessment - February 2011

Outer Bypass

Assumptions about rating

Ratings are relative to the existing route option.

Ratings are a composite for the whole route option and may incorporate a mix of ratings for sub-sections of the route.

Assumptions about traffic patterns

Inter-district through traffic (i.e. traffic which is not starting or finishing in Ashburton): Little traffic likely to use this new route due to extra distance, travel time and cost. Usage of this route likely to increase as congestion in central Ashburton becomes increasingly intolerable (long term).

Local traffic (including traffic between Ashburton and surrounding rural areas): Little local commuter traffic uses this route; route might provide some opportunities for some local transport trips starting or finishing at the NE industrial area.

	Outer Bypass			
	Criteria	***Exemplified by***	***Comments***	***Rating***
Social	**Safety**	Pedestrian, cyclist and motorist safety.	Makes little contribution to safety in Ashburton - little traffic is likely to use new route. Therefore there is little change in traffic conditions on existing route.	0
	Personal Security	Safety of people in public places by ensuring public places are well lit and able to be observed by nearby residents and/or passers by. In this context, 'public places' refer to the public road reserves and adjacent places where members of the public are entitled to be. (as in "Crime Prevention Through Environmental Design" (CPTED))	Makes little contribution to Personal security in Ashburton - Little traffic is likely to use new route, and there is little change in other public places. CPTED concept is less applicable on rural sections of road due in part to small number of residences and greater distances between roads and homes.	0
	Emergency Services	Ability of emergency services to respond quickly to emergencies in all parts of the district, but with a particular emphasis on urban areas where events are more common. Influenced by distance of travel, number of intersections to cross and traffic density.	Does not help emergency services respond quickly to events in urban area. Small improvement in response to south eastern rural area. Comparatively small population means little advantage for emergency services.	0
	Lifeline	The bridge carries utilities (water supply, telecommunications, electricity) across the river. Ability to maintain essential utilities to communities in the event of a civil defence emergency (flood, earthquake etc). Most effectively achieved through duplication.	Distance from existing services in urban Ashburton means this location unlikely to provide viable route for services across the Ashburton River.	0
	Route Security	Ability to provide reasonable access in the event of a local incident (breakdown, accident etc), or major emergency (natural hazard) closing the existing bridge or approach.	Provides viable alternative route across the Ashburton River, albeit with a moderate detour. Distance from existing bridge improves ability to provide alternative if localised event affects one or other bridge.	2
	Accessibility	Ability to get to key destinations within town, including homes, employment, education, medical, recreation, and shopping. Includes walking, cycling, private motor vehicle, public transport, freight. Often a particular issue at peak times.	Provides no new or improved routes within Ashburton. Lack of traffic diverting to new route means little change in traffic patterns within Ashburton.	0
	Community Severance	The splitting of sectors of a community by a physical & perceived barrier (includes road & traffic). At town level & street level.	Lack of changes to existing road layout, combined with small volumes of traffic diverting to new route results in minimal impact on severance within Ashburton or Tinwald.	0

Ashburton 2nd Bridge Additional Investigation Option Assessment - February 2011

	Outer Bypass			
	Criteria	***Exemplified by***	***Comments***	***Rating***
Social	**Active Transport**	Promoting active transport (e.g. walking and cycling as means of travel to school and workplaces) by improving and extending walking and cycling infrastructure, and improving environmental conditions for walking and cycling (i.e. a safer, more pleasant environment with good quality surfaces); often involves increasing the separation between vehicular traffic routes (particularly those involving heavy vehicles) and pedestrian/cyclist routes.	Little change to road layout or traffic volumes in Ashburton. No improvement to existing pedestrian/cyclist environment. Few pedestrians or cyclists likely to use route for transport. Facilitates good recreational cycling circuit. May encourage cycling to/from Lake Hood.	1
	Land	Ease of land acquisition. Number of properties requiring partial or full acquisition. Houses and other buildings requiring demolition. Dislocation of property owners.	Land required from 42 properties. Significant property severance at properties on curves.	-2
Cultural	**Iwi**	Impacts on local and regional Iwi. Culturally important sites, accidental discovery.	Yet to discuss with Iwi.	
	Heritage	Impact on heritage sites, buildings etc & archaeology.	No impact identified at this stage.	0
Environ	**Environment - Water**	Impact on water quality, and river hydraulics.	Little impact on water quality. Little impact on river hydraulics.	0
	Amenity & Public Health	Changes to amenity values, e.g. noise levels, air quality, vibration, visual effects and streetscape. In severe cases has impacts on personal health.	A new major road will have some negative impact on rural amenity values in affected areas. These impacts minimised by low traffic volumes likely to use this route other than in the very long term. Relatively few dwellings affected.	0
Economic	**Cost**	Total cost - land & construction. Whole of life cost. Local ratepayer share.	Estimated total cost $69M to $84M. NZTA subsidy unlikely. Total cost to ADC $69M to $84M.	-2
	Economic Development	Impact on local businesses operating in Ashburton and Tinwald. Cost to users, including freight operators (including flow on effects).	Small change in traffic volumes in Ashburton likely to result in little impact on local businesses.	0
	Planning for the Long Term	Addressing short, medium, and long term transportation issues throughout the next 50 years.	Does not start to address transportation issues in Ashburton until congestion reaches point where long detour becomes attractive alternative for inter district through traffic. In the meantime, local traffic will be faced with increasing delays on SH1 and nearby roads.	0
	Sewer Replacement Opportunity	Existing sewer siphon under Ashburton River near the oxidation ponds is likely to need replacement in the medium to long term. A new bridge may provide a viable route for the sewer, and thereby reduce some of the costs of sewer replacement.	Likely to provide a reasonable link to existing siphon.	1
			Total	**0**

Ashburton 2nd Bridge Additional Investigation Option Assessment - February 2011

Inner Bypass

Assumptions about rating

Ratings are relative to the existing route option.

Ratings are a composite for the whole route option and may incorporate a mix of ratings for sub-sections of the route.

Assumptions about traffic patterns

Inter-district through traffic (i.e. traffic which is not starting or finishing in Ashburton): Little traffic likely to use this new route due to extra distance, travel time and cost. Usage of this route likely to increase as congestion in central Ashburton becomes intolerable (long term).

Local traffic (including traffic between Ashburton and surrounding rural areas): Little local commuter traffic uses this route; route might provide marginal opportunities for some local transport trips involving NE industrial area.

	Inner Bypass			
	Criteria	***Exemplified by***	***Comments***	***Rating***
Social	**Safety**	Pedestrian, cyclist and motorist safety.	Makes little contribution to safety in Ashburton - little traffic is likely to use new route. Therefore there is little change in traffic conditions on existing route.	0
	Personal Security	Safety of people in public places by ensuring public places are well lit and able to be observed by nearby residents and/or passers by. In this context, 'public places' refer to the public road reserves and adjacent places where members of the public are entitled to be. (as in "Crime Prevention Through Environmental Design" (CPTED))	Makes little contribution to personal security in Ashburton. Little traffic is likely to use new route, and there is little change in other public places. CPTED concept is less applicable on rural sections of road due in part to small number of residences and greater distances between roads and homes.	0
	Emergency Services	Ability of emergency services to respond quickly to emergencies in all parts of the district, but with a particular emphasis on urban areas where events are more common. Influenced by distance of travel, number of intersections to cross and traffic density.	Does not help emergency services respond quickly to events in urban area. Small improvement in response to south eastern rural area. Comparatively small population means little advantage for emergency services.	0
	Lifeline	The bridge carries utilities (water supply, telecommunications, electricity) across the river. Ability to maintain essential utilities to communities in the event of a civil defence emergency (flood, earthquake etc). Most effectively achieved through duplication.	May be able to provide alternative route for services once urban area of Tinwald approaches the Trevors Rd extension.	1
	Route Security	Ability to provide reasonable access in the event of a local incident (breakdown, accident etc), or major emergency (natural hazard) closing the existing bridge or approach.	Provides viable alternative route across the Ashburton River, albeit with a moderate detour. Distance from existing bridge improves ability to provide alternative if localised event affects one or other bridge.	2
	Accessibility	Ability to get to key destinations within town, including homes, employment, education, medical, recreation, and shopping. Includes walking, cycling, private motor vehicle, public transport, freight. Often a particular issue at peak times.	Provides no new or improved routes within Ashburton. Lack of traffic diverting to new route means little change in traffic patterns within Ashburton.	0
	Community Severance	The splitting of sectors of a community by a physical & perceived barrier (includes road & traffic). At town level & street level.	Lack of changes to existing road layout, combined with small volumes of traffic diverting to new route results in minimal impact on severance within Ashburton or Tinwald. Increased traffic volumes in long term may result in some severance on Trevors Rd & Seafield Rd.	0

Ashburton 2nd Bridge Additional Investigation Option Assessment - February 2011

	Inner Bypass			
	Criteria	***Exemplified by***	***Comments***	***Rating***
Social	**Active Transport**	Promoting active transport (e.g. walking and cycling as means of travel to school and workplaces) by improving and extending walking and cycling infrastructure, and improving environmental conditions for walking and cycling (i.e. a safer, more pleasant environment with good quality surfaces); often involves increasing the separation between vehicular traffic routes (particularly those involving heavy vehicles) and pedestrian/cyclist routes.	Little change to road layout or traffic volumes in Ashburton. No improvement to existing pedestrian/cyclist environment. Few pedestrians or cyclists likely to use route for transport. Facilitates good recreational cycling circuit. May encourage cycling to/from Lake Hood.	1
	Land	Ease of land acquisition Number of properties requiring partial or full acquisition. Houses and other buildings requiring demolition. Dislocation of property owners.	Land required from 47 properties. Significant property severance especially on curves.	-2
Cultural	**Iwi**	Impacts on local and regional Iwi. Culturally important sites, accidental discovery.	Yet to discuss with Iwi.	
	Heritage	Impact on heritage sites, buildings etc & archaeology.	No impact identified at this stage.	0
Environ	**Environment - Water**	Impact on water quality, and river hydraulics.	Little impact on water quality. Little impact on river hydraulics.	0
	Amenity & Public Health	Changes to amenity values, e.g. noise levels, air quality, vibration, visual effects and streetscape. In severe cases has impacts on personal health.	Some negative impact on residential amenity values in affected rural areas and dwellings on the current town boundary. These impacts minimised by low traffic volumes likely to use this route other than in the very long term. More dwellings affected than for the outer bypass.	-1
Economic	**Cost**	Total cost - Land & construction. Whole of life cost. Local ratepayer share.	Estimated total cost $48M to $58M. NZTA subsidy unlikely. Total cost to ADC $48M to $58M.	-2
	Economic Development	Impact on local businesses operating in Ashburton and Tinwald. Cost to users, including freight operators (including flow on effects).	Small change in traffic volumes in Ashburton likely to result in little impact on local businesses. Possible small improvement in heavy vehicle access to NE quarter.	0
	Planning for the Long Term	Addressing short, medium, and long term transportation issues throughout the next 50 years.	Does not start to address transportation issues in Ashburton until congestion reaches point where long detour becomes attractive alternative for inter district through traffic. In the meantime, local traffic will be faced with increasing delays on SH1 and nearby roads.	0
	Sewer Replacement Opportunity	Existing sewer siphon under Ashburton River near the oxidation ponds is likely to need replacement in the medium to long term. A new bridge may provide a viable route for the sewer, and thereby reduce some of the costs of sewer replacement.	Likely to be able to provide connection to trunk sewer on northern riverbank, and to relief sewer on Trevors Rd.	1
			Total	**0**

Ashburton 2nd Bridge Additional Investigation Option Assessment - February 2011

Chalmers Ave to East of Tinwald - Rural

Assumptions about rating

Ratings are relative to the existing route option.
Ratings are a composite for the whole route option and may incorporate a mix of ratings for sub-sections of the route.

Assumptions about traffic patterns

Inter-district through traffic (i.e. traffic which is not starting or finishing in Ashburton): Continues to use SH1 as most direct route.

Local traffic (including traffic between Ashburton and surrounding rural areas): Significant proportion of local commuter/car traffic likely to use Chalmers Ave bridge for one leg of each return trip, particularly at peak travel times.
Local transport operators likely to use Chalmers Ave bridge where it provides a shorter route and/or fewer stops at intersections (trips involving east-side destinations).

Much of the new local traffic on the southern part of Chalmers Ave will disperse along local roads progressively along Chalmers Ave.

Much local traffic on the northern part of Grove St will disperse along local roads progressively along Grove St.
Little change in traffic volume on Graham St (increase in traffic from SH offset by reduction from east Tinwald & Lake Hood).
Assumed no signals at SH1.
If signals installed on SH1 at Tinwald will make it easier to access this route & encourage more traffic to use it (particularly heavy vehicles accessing north east).

	Chalmers Ave to East of Tinwald - Rural			
	Criteria	***Exemplified by***	***Comments***	***Rating***
Social	**Safety**	Pedestrian, cyclist and motorist safety.	Reduction in local traffic accessing SH1 through Tinwald improves safety due to fewer right turn movements across SH1 . Provides safer route for cyclists between Tinwald & Ashburton, both on existing SH and on new bridge. Rural link less safe for pedestrians due to lack of pedestrian facilities. Little change in total traffic volume on Graham St - little impact on safety at Tinwald school.	1
	Personal Security	Safety of people in public places by ensuring public places are well lit and able to be observed by nearby residents and/or passers by. In this context, 'public places' refer to the public road reserves and adjacent places where members of the public are entitled to be. (as in "Crime Prevention Through Environmental Design" (CPTED))	Makes little contribution to personal security in Ashburton. Good personal security on northern side of river (Chalmers Ave & associated side roads). Poor personal security on southern side. (CPTED concept is less applicable on rural sections of road due in part to small number of residences and greater distances between roads and homes).	0
	Emergency Services	Ability of emergency services to respond quickly to emergencies in all parts of the district, but with a particular emphasis on urban areas where events are more common. Influenced by distance of travel, number of intersections to cross and traffic density.	Provides a viable alternative shorter route to future residential areas in Tinwald and more direct route to rural areas south east of Tinwald. Lower traffic volumes on both routes may reduce delays for emergency services, especially at peak times.	1

Ashburton 2nd Bridge Additional Investigation Option Assessment - February 2011

	Chalmers Ave to East of Tinwald - Rural			
	Criteria	***Exemplified by***	***Comments***	***Rating***
Social	**Lifeline**	The bridge carries utilities (water supply, telecommunications, electricity) across the river. Ability to maintain essential utilities to communities in the event of a civil defence emergency (flood, earthquake etc). Most effectively achieved through duplication.	Provides convenient alternative linkages for services between north Ashburton and proposed and existing urban area east of Tinwald. Distance from route across existing bridge improves robustness of network especially if localised event affects one or other crossing.	2
	Route Security	Ability to provide reasonable access in the event of a local incident (breakdown, accident etc), or major emergency (natural hazard) closing the existing bridge or approach.	Provides viable alternative route across Ashburton River. Distance from existing bridge improves ability to provide alternative if localised event affects one or other bridge.	2
	Accessibility	Ability to get to key destinations within town, including homes, employment, education, medical, recreation, and shopping. Includes walking, cycling, private motor vehicle, public transport, freight. Often a particular issue at peak times.	Significantly improves ability to get between east Tinwald and rural area east of Tinwald, and north Ashburton using new bridge. Reduction in traffic on existing route improves access between Tinwald and north Ashburton using existing SH1.	2
	Community Severance	The splitting of sectors of a community by a physical & perceived barrier (includes road & traffic). At town level & street level.	Reduced traffic on SH1 reduces east-west severance effects of SH1 throughout Ashburton and Tinwald. Partially offset by increase traffic numbers & severance effects on Chalmers Ave and in rural areas east of Tinwald, particularly near the river.	1
	Active Transport	Promoting active transport (e.g. walking and cycling as means of travel to school and workplaces) by improving and extending walking and cycling infrastructure, and improving environmental conditions for walking and cycling (i.e. a safer, more pleasant environment with good quality surfaces); often involves increasing the separation between vehicular traffic routes (particularly those involving heavy vehicles) and pedestrian/cyclist routes.	Reduction in noise & pollution levels on SH1 may encourage more pedestrians and cyclists. Offset by increase in noise and pollution on Chalmers Ave. Enhanced provision for pedestrian and cycling activity across the Chalmers Ave bridge may encourage pedestrians and cyclists. Rural section east of Tinwald away from residential areas & not appealing for commuting. Provides moderate addition to the recreational walking and cycling network.	1
	Land	Ease of land acquisition. Number of properties requiring partial or full acquisition. Houses and other buildings requiring demolition. Dislocation of property owners.	Land required from 6 properties. Property severance may be able to be minimised by running along property boundaries.	0
Cultural	**Iwi**	Impacts on local and regional Iwi. Culturally important sites, accidental discovery.	Yet to discuss with Iwi.	
	Heritage	Impact on heritage sites, buildings etc & archaeology.	No impact identified at this stage.	0
Environ	**Environment - Water**	Impact on water quality, and river hydraulics.	Little impact on water quality. Little impact on river hydraulics.	0
	Amenity & Public Health	Changes to amenity values, e.g. noise levels, air quality, vibration, visual effects and streetscape. In severe cases has impacts on personal health	Some improvement in amenity on SH1 through Ashburton. Offset by reduction on southern section of Chalmers Ave. Some reduction in rural amenity on greenfields route east of Tinwald. This affects a small number of larger properties. Nature of this area likely to change with zone changes under District Plan Review.	-1
Economic	**Cost**	Total cost - Land & construction. Whole of life cost. Local ratepayer share.	Estimated total cost $27M to $32M. NZTA subsidy possible. Likely ADC cost less than $14M.	1
	Economic Development	Impact on local businesses operating in Ashburton and Tinwald. Cost to users, including freight operators (including flow on effects).	Small change in through traffic on SH1 likely to result in little impact on local businesses along State Highway. Improved efficiency for traffic, including freight, on SH1.	1

Ashburton 2nd Bridge Additional Investigation Option Assessment - February 2011

Chalmers Ave to East of Tinwald - Rural			
Criteria	***Exemplified by***	***Comments***	***Rating***
Planning for the Long Term	Addressing short, medium, and long term transportation issues throughout the next 50 years.	Land acquisition, detailed design & construction likely to take more than 5 years. Therefore cannot address short term issues on SH1. Likely to address growth in local traffic crossing the Ashburton River due to medium to long term development of east Tinwald. Unlikely to address increase in through traffic, but reduction in local traffic will delay need for long term through route.	**2**
Sewer Replacement Opportunity	Existing sewer siphon under Ashburton River near the oxidation ponds is likely to need replacement in the medium to long term. A new bridge may provide a viable route for the sewer, and thereby reduce some of the costs of sewer replacement.	May be able to connect to trunk sewer on northern riverbank. Will not readily connect to relief sewer on Trevors Rd.	**0**
		Total	**13**

Ashburton 2nd Bridge Additional Investigation Option Assessment - February 2011

Chalmers Ave to East of Tinwald - Urban

Assumptions about rating

Ratings are relative to the existing route option.

Ratings are a composite for the whole route option and may incorporate a mix of ratings for sub-sections of the route.

Assumptions about traffic patterns

Inter-district through traffic (i.e. traffic which is not starting or finishing in Ashburton): Continues to use SH1 as most direct route.

Local traffic (including traffic between Ashburton and surrounding rural areas): Significant proportion of local commuter/car traffic likely to use Chalmers Ave bridge for one leg of each return trip, particularly at peak travel times.

Transport operators likely to use Chalmers Ave bridge where it provides a shorter route (trips involving east-side destinations) and / or fewer stops at intersections.

Much of the new local traffic on the southern part of Chalmers Ave will disperse along local roads progressively along Chalmers Ave.

Much local traffic on the northern part of Grove St will disperse along local roads progressively along Grove St.
Little change in traffic volume on Graham St (increase in traffic from SH offset by reduction from east Tinwald & Lake Hood).
Assumed no signals at SH1.
If signals installed on SH1 at Tinwald will make it easier to access this route & encourage more traffic to use it (particularly heavy vehicles accessing north east).

	Chalmers Ave to East of Tinwald - Urban			
	Criteria	***Exemplified by***	***Comments***	***Rating***
Social	**Safety**	Pedestrian, cyclist and motorist safety.	Reduction in local traffic accessing SH1 through Tinwald improves safety due to fewer right turn movements across SH1. Provides safe route for pedestrians and cyclists between Tinwald & Ashburton on new bridge. Small improvement in safety for pedestrians and cyclists on existing SH1 due to reduction in traffic. New urban link designed to provide safe environment for all road users. Little change in total traffic volume on Graham St - little impact on safety at Tinwald school.	**2**
	Personal Security	Safety of people in public places by ensuring public places are well lit and able to be observed by nearby residents and/or passers by. In this context, 'public places' refer to the public road reserves and adjacent places where members of the public are entitled to be. (as in "Crime Prevention Through Environmental Design" (CPTED))	Good personal security on northern side of river (Chalmers Ave & associated side roads). Good personal security for pedestrians on route through eventual residential areas (assuming noise & other barriers do not block view).	**1**
	Emergency Services	Ability of emergency services to respond quickly to emergencies in all parts of the district, but with a particular emphasis on urban areas where events are more common. Influenced by distance of travel, number of intersections to cross and traffic density.	Provides a viable alternative shorter route to future residential areas in Tinwald and more direct route to rural areas south east of Tinwald. Lower traffic volumes on both routes may reduce delays for emergency services, especially at peak times.	**1**

Ashburton 2nd Bridge Additional Investigation Option Assessment - February 2011

	Chalmers Ave to East of Tinwald - Urban			
	Criteria	***Exemplified by***	***Comments***	***Rating***
Social	**Lifeline**	The bridge carries utilities (water supply, telecommunications, electricity) across the river. Ability to maintain essential utilities to communities in the event of a civil defence emergency (flood, earthquake etc). Most effectively achieved through duplication.	Provides convenient alternative linkages for services between north Ashburton and proposed and existing urban area east of Tinwald. Distance from route across existing bridge improves robustness of network especially if localised event affects one or other crossing.	2
	Route Security	Ability to provide reasonable access in the event of a local incident (breakdown, accident etc), or major emergency (natural hazard) closing the existing bridge or approach.	Provides viable alternative route across Ashburton River. Distance from existing bridge improves ability to provide alternative if localised event affects one or other bridge.	2
	Accessibility	Ability to get to key destinations within town, including homes, employment, education, medical, recreation, and shopping. Includes walking, cycling, private motor vehicle, public transport, freight. Often a particular issue at peak times.	Significantly improves ability to get between east Tinwald and rural area east of Tinwald, and north Ashburton using new bridge. Reduction in traffic on existing route improves access between Tinwald and north Ashburton using existing SH1.	2
	Community Severance	The splitting of sectors of a community by a physical & perceived barrier (includes road & traffic). At town level & street level.	Reduced traffic on SH1 reduces east-west severance effects of SH1 throughout Ashburton and Tinwald. Partially offset by increase traffic numbers & severance effects on Chalmers Ave and in proposed new urban areas east of Tinwald (currently rural), particularly near the river.	1
	Active Transport	Promoting active transport (e.g. walking and cycling as means of travel to school and workplaces) by improving and extending walking and cycling infrastructure, and improving environmental conditions for walking and cycling (i.e. a safer, more pleasant environment with good quality surfaces); often involves increasing the separation between vehicular traffic routes (particularly those involving heavy vehicles) and pedestrian/cyclist routes.	Reduction in noise & pollution levels on SH1 may encourage more pedestrians and cyclists. Partially offset by increase in noise and pollution on Chalmers Ave. Ability to provide quality pedestrian and cyclist facilities in greenfields section east of Tinwald. Significant improvement in pedestrian & cycle facilities on new route may encourage pedestrians and cyclists. Provides moderate addition to the recreational walking and cycling network.	2
	Land	Ease of land acquisition Number of properties requiring partial or full acquisition. Houses and other buildings requiring demolition. Dislocation of property owners.	Land required from 10 properties. Likely to require demolition of homes and/or property severance depending on final alignment. Property severance unlikely to result in lots smaller than 4,000m^2 (min lot size under proposed Res D).	-1
Cultural	**Iwi**	Impacts on local and regional Iwi. Culturally important sites, accidental discovery.	Yet to discuss with Iwi.	
	Heritage	Impact on heritage sites, buildings etc & archaeology.	No impact identified at this stage.	0
Environ	**Environment - Water**	Impact on water quality, and river hydraulics.	Little impact on water quality. Little impact on river hydraulics.	0
	Amenity & Public Health	Changes to amenity values, e.g. noise levels, air quality, vibration, visual effects and streetscape. In severe cases has impacts on personal health.	Some improvement in amenity on SH1 through Ashburton. Offset by reduction on southern section of Chalmers Ave. Some reduction in existing rural amenity on greenfields route east of Tinwald. This affects a small number of larger properties. Nature of this area likely to change with zone changes under District Plan Review. Future residents of the new residential area east of Tinwald will not experience loss of amenity (gives certainty to future residents).	-1
Economic	**Cost**	Total cost - land & construction. Whole of life cost. Local ratepayer share.	Estimated total cost $30M to $35M. NZTA subsidy possible. Likely ADC cost less than $15M.	1
	Economic Development	Impact on local businesses operating in Ashburton and Tinwald. Cost to users, including freight operators (including flow on effects).	Small change in through traffic on SH1 likely to result in little impact on local businesses along State Highway. Improved efficiency for traffic, including freight, on SH1.	1

Ashburton 2nd Bridge Additional Investigation Option Assessment - February 2011

Chalmers Ave to East of Tinwald - Urban			
Criteria	***Exemplified by***	***Comments***	***Rating***
Planning for the Long Term	Addressing short, medium, and long term transportation issues throughout the next 50 years	Land acquisition, detailed design & construction likely to take more than 5 years. Therefore cannot address short term issues on SH1. Likely to address growth in local traffic crossing the Ashburton River due to medium to long term development of east Tinwald. Unlikely to address increase in through traffic, but reduction in local traffic will delay need for long term through route.	**2**
Sewer Replacement Opportunity	Existing sewer siphon under Ashburton River near the oxidation ponds is likely to need replacement in the medium to long term. A new bridge may provide a viable route for the sewer, and thereby reduce some of the costs of sewer replacement.	May be able to connect to trunk sewer on northern riverbank. Will not readily connect to relief sewer on Trevors Rd.	**0**
		Total	**15**

Ashburton 2nd Bridge Additional Investigation Option Assessment - February 2011

Chalmers Ave to Grove St

Assumptions about rating

Ratings are relative to the existing route option.

Ratings are a composite for the whole route option and may incorporate a mix of ratings for sub-sections of the route.

Assumptions about traffic patterns

Inter-district through traffic (i.e. traffic which is not starting or finishing in Ashburton): Continues to use SH1 as most direct route.

Local traffic (including traffic between Ashburton and surrounding rural areas): Significant proportion of local commuter/car traffic likely to use Chalmers Ave bridge for one leg of each return trip, particularly at peak travel times.

Transport operators likely use Chalmers Ave bridge where it provides a shorter route and / or fewer stops at intersections.
Roundabouts & traffic calming on Grove St likely to discourage some heavy traffic.

Much of the new local traffic on the southern part of Chalmers Ave will disperse along local roads progressively along Chalmers Ave.

Much local traffic on the northern part of Grove St will disperse along local roads progressively along Grove St.
Little change in traffic volume on Graham St (increase in traffic from SH offset by reduction from east Tinwald & Lake Hood).
Assumed no signals at SH1.
If signals installed on SH1 at Tinwald will make it easier to access this route & encourage more traffic to use it (particularly heavy vehicles accessing north east).

	Chalmers Ave to Grove St			
	Criteria	***Exemplified by***	***Comments***	***Rating***
Social	**Safety**	Pedestrian, cyclist and motorist safety.	Reduction in local traffic accessing SH1 through Tinwald improves safety due to fewer right turn movements across SH1. Provides safe route for pedestrians and cyclists between Tinwald & Ashburton on new bridge. Small improvement in safety for pedestrians and cyclists on existing SH1 due to reduction in traffic. Some potential safety issues with increased traffic on Grove St. Little change in total traffic volume on Graham St - little impact on safety at Tinwald school.	1
	Personal Security	Safety of people in public places by ensuring public places are well lit and able to be observed by nearby residents and/or passers by. In this context, 'public places' refer to the public road reserves and adjacent places where members of the public are entitled to be. (as in "Crime Prevention Through Environmental Design" (CPTED))	Good personal security on northern side of river (Chalmers Ave & associated side roads). Good personal security on routes through eventual residential areas on southern side of River (Grove St and associated side roads).	2

Ashburton 2nd Bridge Additional Investigation Option Assessment - February 2011

	Chalmers Ave to Grove St			
	Criteria	***Exemplified by***	***Comments***	***Rating***
Social	**Emergency Services**	Ability of emergency services to respond quickly to emergencies in all parts of the district, but with a particular emphasis on urban areas where events are more common. Influenced by distance of travel, number of intersections to cross and traffic density	Provides a viable alternative shorter route to existing and future residential areas in Tinwald and slightly more direct route to rural areas south east of Tinwald. Lower traffic volumes on both routes may reduce delays for emergency services, especially at peak times.	1
	Lifeline	The bridge carries utilities (water supply, telecommunications, electricity) across the river. Ability to maintain essential utilities to communities in the event of a civil defence emergency (flood, earthquake etc). Most effectively achieved through duplication.	Provides convenient alternative linkages for services between north Ashburton and proposed and existing urban area east of Tinwald. Distance from route across existing bridge improves robustness of network especially if localised event affects one or other crossing.	2
	Route Security	Ability to provide reasonable access in the event of a local incident (breakdown, accident etc), or major emergency (natural hazard) closing the existing bridge or approach.	Provides viable alternative route across Ashburton River. Distance from existing bridge improves ability to provide alternative if localised event affects one or other bridge.	2
	Accessibility	Ability to get to key destinations within town, including homes, employment, education, medical, recreation, and shopping. Includes walking, cycling, private motor vehicle, public transport, freight. Often a particular issue at peak times.	Significantly improves ability to get from east Tinwald and rural area east of Tinwald to north Ashburton using new bridge. Reduction in traffic on existing route improves access between Tinwald and north Ashburton using existing SH1.	2
	Community Severance	The splitting of sectors of a community by a physical & perceived barrier (includes road & traffic). At town level & street level.	Increase traffic numbers & severance effects on Grove St and Chalmers Ave. Impacts more noticeable on Grove St due to existing low traffic volumes. Partially offset by the reduced severance effects of SH1 through Ashburton and Tinwald as a result of reduction in traffic on SH1.	-1
	Active Transport	Promoting active transport (e.g. walking and cycling as means of travel to school and workplaces) by improving and extending walking and cycling infrastructure, and improving environmental conditions for walking and cycling (i.e. a safer, more pleasant environment with good quality surfaces); often involves increasing the separation between vehicular traffic routes (particularly those involving heavy vehicles) and pedestrian/cyclist routes.	Reduction in noise & pollution levels on SH1 may encourage more pedestrians and cyclists. Offset by increase in noise and pollution on Chalmers Ave and Grove St. Significant improvement in pedestrian & cycle facilities on new route may encourage pedestrians and cyclists, although less scope for separation of pedestrians/cyclists from vehicles on the Grove St section.	1
	Land	Ease of land acquisition. Number of properties requiring partial or full acquisition. Houses and other buildings requiring demolition. Dislocation of property owners.	Land required from 4 properties. No homes likely to be demolished at present. Construction of new rest home prior to designation being in place likely to make acquisition of that property more difficult.	0
Cultural	**Iwi**	Impacts on local and regional Iwi. Culturally important sites, accidental discovery.	Yet to discuss with Iwi.	
	Heritage	Impact on heritage sites, buildings etc & archaeology.	No impact identified at this stage.	0
Environ	**Environment - Water**	Impact on water quality, and river hydraulics.	Little impact on water quality. Little impact on river hydraulics.	0
	Amenity & Public Health	Changes to amenity values, e.g. noise levels, air quality, vibration, visual effects and streetscape. In severe cases has impacts on personal health.	Significant reduction in residential amenity values for a large number of properties in Grove St and some reduction in Chalmers Ave. Only partially offset by moderate improvements along SH1.	-2

Ashburton 2nd Bridge Additional Investigation Option Assessment - February 2011

	Chalmers Ave to Grove St			
	Criteria	***Exemplified by***	***Comments***	***Rating***
Economic	**Cost**	Total cost - land & construction. Whole of life cost. Local ratepayer share.	Estimated total cost $25M to $30M. NZTA subsidy possible. Likely ADC cost less than $13M.	**1**
Economic	**Economic Development**	Impact on local businesses operating in Ashburton and Tinwald. Cost to users, including freight operators (including flow on effects)	Small change in through traffic on SH1 likely to result in little impact on local businesses along State Highway. Improved efficiency for traffic, including freight, on SH1.	**1**
	Planning for the Long Term	Addressing short, medium, and long term transportation issues throughout the next 50 years	Land acquisition, detailed design & construction likely to take more than 5 years. Therefore cannot address short term issues on SH1. Likely to address medium term issues (increase in local traffic on bridge resulting from development in east Tinwald). Unlikely to address increase in through traffic, but reduction in local traffic will delay need for long term option. Less effectively address long term development of east Tinwald	**1**
	Sewer Replacement Opportunity	Existing sewer siphon under Ashburton River near the oxidation ponds is likely to need replacement in the medium to long term. A new bridge may provide a viable route for the sewer, and thereby reduce some of the costs of sewer replacement.	May be able to connect to trunk sewer on northern riverbank. Will not readily connect to relief sewer on Trevors Rd.	**0**
			Total	**11**

Ashburton 2nd Bridge Additional Investigation Option Assessment - February 2011

Melcombe St - Level Crossing

Assumptions about rating

Ratings are relative to the existing route option.
Ratings are a composite for the whole route option and may incorporate a mix of ratings for sub-sections of the route.

Assumptions about traffic patterns

Inter-district through traffic (i.e. traffic which is not starting or finishing in Ashburton): Uses the new Melcombe St section of SH1.

Local traffic (including traffic between Ashburton and surrounding rural areas): Significant proportion of local traffic between east Tinwald & north Ashburton likely to use Archibald St. Some may use Melcombe St/ SH1 to access north west Ashburton.
Significant proportion of local traffic between west Tinwald & north Ashburton likely to use Melcombe St / SH1. Some may use Archibald St to access north east Ashburton.
Some traffic using Archibald St to access north west Ashburton likely to stay on East St.
Signalised intersections on Melcombe St likely to favour through traffic - resulting in delays for local turning traffic.

Melcombe St - Level Crossing				
	Criteria	***Exemplified by***	***Comments***	***Rating***
Social	**Safety**	Pedestrian, cyclist and motorist safety.	Reduction in traffic on existing SH1 in Tinwald improves safety for vehicles turning right from east Tinwald. Offset by increased risk of high speed loss of control crashes on reverse curves at end of long high speed straight on SH1 (south of Tinwald).	0
	Personal Security	Safety of people in public places by ensuring public places are well lit and able to be observed by nearby residents and or passers by. In this context, 'public places' refer to the public road reserves and adjacent places where members of the public are entitled to be. (as in "Crime Prevention Through Environmental Design" (CPTED))	New route on Melcombe St will provide similar levels of personal security to existing route. Overall little change in personal security.	0
	Emergency Services	Ability of emergency services to respond quickly to emergencies in all parts of the district, but with a particular emphasis on urban areas where events are more common. Influenced by distance of travel, number of intersections to cross and traffic density.	New route very close to existing. Therefore little change in access for emergency services. Reduction in traffic volumes may reduce delays for emergency services especially at peak times.	1
	Lifeline	The bridge carries utilities (water supply, telecommunications, electricity) across the river. Ability to maintain essential utilities to communities in the event of a civil defence emergency (flood, earthquake etc). Most effectively achieved through duplication.	Provides viable alternative route for water supply, electricity, and telecommunications. Proximity to existing route may increase vulnerability to incidents which affect existing bridge.	1
	Route Security	Ability to provide reasonable access in the event of a local incident (breakdown, accident etc), or major emergency (natural hazard) closing the existing bridge or approach.	Provides alternative route for isolated event, but proximity to existing bridge may increase vulnerability to events which affect existing bridge.	1

Ashburton 2nd Bridge Additional Investigation Option Assessment - February 2011

Melcombe St - Level Crossing

	Criteria	Exemplified by	Comments	Rating
Social	**Accessibility**	Ability to get to key destinations within town, including homes, employment, education, medical, recreation, and shopping. Includes walking, cycling, private motor vehicle, public transport, freight. Often a particular issue at peak times.	Provides some improved accessibility between Ashburton and Tinwald. Private properties (mainly business premises) and minor side roads north of river likely to be left in / left out only. Some difficulty accessing 4 lane SH north of river, and inconvenience for local traffic at signalised intersections in Tinwald, which are likely to favour SH1 through traffic .	1
Social	**Community Severance**	The splitting of sectors of a community by a physical & perceived barrier (includes road & traffic). At town level & street level.	Slight increase in severance on East St due to increase in local traffic using East St rather than SH1. Offset by small reduction in severance on SH1 north of river. Significant increase in severance due to SH1 traffic on Melcombe St. Partially offset by small reduction in severance on Archibald St Some increase in severance between east and west Tinwald due to closure of existing SH1 and Maronan St railway crossings, and creation of a double stream of two-way through traffic through Tinwald.	-1
Social	**Active Transport**	Promoting active transport (e.g. walking and cycling as means of travel to school and workplaces) by improving and extending walking and cycling infrastructure, and improving environmental conditions for walking and cycling (i.e. a safer, more pleasant environment with good quality surfaces); often involves increasing the separation between vehicular traffic routes (particularly those involving heavy vehicles) and pedestrian/cyclist routes.	Reduction in noise & pollution levels on SH1 through Tinwald. Offset by increase on Melcombe St. Small improvement in pedestrian & cycle facilities on new route. No significant change to recreation walking and cycling networks.	1
Social	**Land**	Ease of land acquisition Number of properties requiring partial or full acquisition. Houses and other buildings requiring demolition. Dislocation of property owners.	Land required from 21 properties. Some property severance due to curves at south end of Tinwald. Possibility of demolition of one or two homes.	-2
Cultural	**Iwi**	Impacts on local and regional Iwi. Culturally important sites, accidental discovery.	Yet to discuss with Iwi.	
Cultural	**Heritage**	Impact on heritage sites, buildings etc & archaeology.	No impact identified at this stage.	0
Environ	**Environment - Water**	Impact on water quality, and river hydraulics.	Little impact on water quality. New bridge would need to be designed to minimise hydraulic impacts on existing rail bridge - locate piers at similar locations to existing piers to minimise ability for debris to accumulate between piers.	0
Environ	**Amenity & Public Health**	Changes to amenity values, e.g. noise levels, air quality, vibration, visual effects and streetscape. In severe cases has impacts on personal health.	Small improvements in residential amenity values along Archibald St due to traffic reductions on existing SH1. Likely to affect approx 50 homes. Offset by reduction in residential amenity values along Melcombe St with State Highway traffic at closer proximity to approx 60 homes. Additional reduction in street-side amenity in the CBD when existing SH1 level crossing is closed and increased local traffic passes through East St.	-2
Economic	**Cost**	Total cost - Land & construction. Whole of life cost. Local ratepayer share.	Estimated total cost $36M to $43M. NZTA subsidy unlikely. Likely ADC cost less than $36M to $43M.	-1
Economic	**Economic Development**	Impact on local businesses operating in Ashburton and Tinwald. Cost to users, including freight operators (including flow on effects).	Likely negative impacts on businesses in Tinwald due to displacement of through traffic. Possible negative impact on businesses on West Street due to reluctance for southbound through traffic to stop and cross 4 lanes.	-1

Ashburton 2nd Bridge Additional Investigation Option Assessment - February 2011

Melcombe St - Level Crossing			
Criteria	***Exemplified by***	***Comments***	***Rating***
Planning for the Long Term	Addressing short, medium, and long term transportation issues throughout the next 50 years	Land acquisition, detailed design & construction likely to take more than 5 years. Therefore cannot address short term issues on SH1. Addresses growth in SH through traffic. Does not address long or short term growth of east Tinwald.	**0**
Sewer Replacement Opportunity	Existing sewer siphon under Ashburton River near the oxidation ponds is likely to need replacement in the medium to long term. A new bridge may provide a viable route for the sewer, and thereby reduce some of the costs of sewer replacement.	Will not readily connect to trunk sewer on northern riverbank. Will not readily connect to relief sewer on Trevors Rd.	**0**
		Total	**-2**

Ashburton 2nd Bridge Additional Investigation Option Assessment - February 2011

Melcombe St - Rail Overpass

Assumptions about rating

Ratings are relative to the existing route option.
Ratings are a composite for the whole route option and may incorporate a mix of ratings for sub-sections of the route.

Assumptions about traffic patterns

Inter-district through traffic (i.e. traffic which is not starting or finishing in Ashburton): Uses the new Melcombe St section of SH1.

Local traffic (including traffic between Ashburton and surrounding rural areas): Significant proportion of local traffic between east Tinwald & north Ashburton likely to use Archibald St. Some may use Melcombe St / SH1 to access north west Ashburton.
Significant proportion of local traffic between west Tinwald & north Ashburton likely to use Melcombe St / SH1. Some may use Archibald St to access north east Ashburton.
Some traffic using Archibald St to access north west Ashburton likely to stay on East St.
Signalised intersections on Melcombe St likely to favour through traffic - resulting in delays for local turning traffic.

Melcombe St - Rail Overpass				
	Criteria	***Exemplified by***	***Comments***	***Rating***
Social	**Safety**	Pedestrian, cyclist and motorist safety.	Reduction in traffic on SH1 in Tinwald improves safety for vehicles turning from east Tinwald. Rail overpass improves safety at rail crossing. However, increased risk of high speed loss of control crashes on reverse curves on incline at end of long high speed straight.	1
	Personal Security	Safety of people in public places by ensuring public places are well lit and able to be observed by nearby residents and or passers by. In this context, 'public places' refer to the public road reserves and adjacent places where members of the public are entitled to be. (as in "Crime Prevention Through Environmental Design" (CPTED))	New route on Melcombe St will provide similar levels of personal security to existing route. Overall little change in personal security.	0
	Emergency Services	Ability of emergency services to respond quickly to emergencies in all parts of the district, but with a particular emphasis on urban areas where events are more common. Influenced by distance of travel, number of intersections to cross and traffic density.	New route very close to existing. Therefore little change in access for emergency services. Reduction in traffic volumes may reduce delays for emergency services especially at peak times.	1
	Lifeline	The bridge carries utilities (water supply, telecommuncations, electricity) across the river. Ability to maintain essential utilities to communities in the event of a civil defence emergency (flood, earthquake etc). Most effectively achieved through duplication.	Provides viable alternative route for water supply, electricity and telecommunications. Proximity to existing route may increase vulnerability to incidents which affect existing bridge.	1
	Route Security	Ability to provide reasonable access in the event of a local incident (breakdown, accident etc), or major emergency (natural hazard) closing the existing bridge or approach.	Provides alternative route for isolated event, but proximity to existing bridge may increase vulnerability to events which affect existing bridge.	1

Ashburton 2nd Bridge Additional Investigation Option Assessment - February 2011

Melcombe St - Rail Overpass

	Criteria	*Exemplified by*	*Comments*	*Rating*
Social	**Accessibility**	Ability to get to key destinations within town, including homes, employment, education, medical, recreation, and shopping. Includes walking, cycling, private motor vehicle, public transport, freight. Often a particular issue at peak times.	Provides some improved accessibility between Ashburton and Tinwald. Private properties (mainly business premises) and minor side roads north of river likely to be left in / left out only. Some difficulty accessing 4 lane SH north of river, and inconvenience for local traffic at signalised intersections in Tinwald, which are likely to favour SH1 through traffic .	1
Social	**Community Severance**	The splitting of sectors of a community by a physical & perceived barrier (includes road & traffic). At town level & street level.	Slight increase in severance on East St due to increase in local traffic using East St rather than SH1. Partially offset by small reduction in severance on SH1 north of river. Significant increase in severance due to SH1 traffic on Melcombe St. Partially offset by small reduction in severance on Archibald St . Some increase in severance between east and west Tinwald due to closure of existing SH1and Maronan St railway crossings.	-1
Social	**Active Transport**	Promoting active transport (e.g. walking and cycling as means of travel to school and workplaces) by improving and extending walking and cycling infrastructure, and improving environmental conditions for walking and cycling (i.e. a safer, more pleasant environment with good quality surfaces); often involves increasing the separation between vehicular traffic routes (particularly those involving heavy vehicles) and pedestrian/cyclist routes.	Reduction in noise & pollution levels on SH1 through Tinwald. Offset by increase on Melcombe St. Small improvement in pedestrian & cycle facilities on new route. No significant change to recreation walking and cycling networks.	1
Social	**Land**	Ease of land acquisition. Number of properties requiring partial or full acquisition. Houses and other buildings requiring demolition. Dislocation of property owners.	Land required from 14 properties. Some property severance due to new access from existing SH1 to new SH1.	-1
Cultural	**Iwi**	Impacts on local and regional Iwi. Culturally important sites, accidental discovery.	Yet to discuss with Iwi.	
Cultural	**Heritage**	Impact on heritage sites, buildings etc & archaeology.	No impact identified at this stage.	0
Environ	**Environment - Water**	Impact on water quality, and river hydraulics.	Little impact on water quality. New bridge would need to be designed to minimise hydraulic impacts on existing rail bridge - locate piers at similar locations to existing piers to minimise ability for debris to accumulate between piers.	0
Environ	**Amenity & Public Health**	Changes to amenity values, e.g. noise levels, air quality, vibration, visual effects and streetscape. In severe cases has impacts on personal health	Small improvements in residential amenity values along Archibald St due to traffic reductions on existing SH1. Likely to affect approx 50 homes. Offset by reduction in residential amenity values along Melcombe St with State Highway traffic at closer proximity to approx 60 homes. Additional reduction in street-side amenity in the CBD when existing SH1 level crossing is closed and increased local traffic passes through East St.	-2
Economic	**Cost**	Total cost - land & construction. Whole of life cost. Local ratepayer share.	Estimated total cost $38M to $46M. NZTA subsidy unlikely. Likely ADC cost $38M to $46M.	-1
Economic	**Economic Development**	Impact on local businesses operating in Ashburton and Tinwald. Cost to users, including freight operators (including flow on effects).	Possible negative impacts on businesses in Tinwald due to displacement of through traffic. Possible negative impact on businesses on West Street due to reluctance for southbound through traffic to stop and cross 4 lanes.	-1

Ashburton 2nd Bridge Additional Investigation Option Assessment - February 2011

Melcombe St - Rail Overpass			
Criteria	***Exemplified by***	***Comments***	***Rating***
Planning for the Long Term	Addressing short, medium, and long term transportation issues throughout the next 50 years	Land acquisition, detailed design & construction likely to take more than 5 years. Therefore cannot address short term issues on SH1. Addresses growth in SH through traffic. Does not address long or short term growth of east Tinwald.	**0**
Sewer Replacement Opportunity	Existing sewer siphon under Ashburton River near the oxidation ponds is likely to need replacement in the medium to long term. A new bridge may provide a viable route for the sewer, and thereby reduce some of the costs of sewer replacement.	Will not readily connect to trunk sewer on northern riverbank. Will not readily connect to relief sewer on Trevors Rd.	**0**
		Total	**0**

Ashburton 2nd Bridge Additional Investigation Option Assessment - February 2011

4 Laning of SH1

Assumptions about rating

Ratings are relative to the existing route option.
Ratings are a composite for the whole route option and may incorporate a mix of ratings for sub-sections of the route.

Assumptions about traffic patterns

Inter-district through traffic (i.e. traffic which is not starting or finishing in Ashburton): All inter district traffic will use 4 laned highway.

Local traffic (including traffic between Ashburton and surrounding rural areas): All local traffic between Ashburton and Tinwald will use 4 laned highway.
Signalised intersections in Tinwald will allow traffic to enter SH1. However signals will be likely to favour through traffic, resulting in delays for local traffic.
Overpass likely to be required at railway crossing. Traffic from South St, Dobson St & Kermode St (east) will only be able to access SH1 via East St and Moore St. Traffic from Dobson St & Kermode St (west) will need to access SH1 via Park Tce (and new extension) and River Tce.
Level crossing alternative requires extensive land acquisition and building demolition.

4 Laning of SH1				
	Criteria	***Exemplified by***	***Comments***	***Rating***
Social	**Safety**	Pedestrian, cyclist and motorist safety.	Railway overpass improves rail crossing safety. Offset by reduction in safety for vehicles turning across 4 lanes, and pedestrians crossing 4 lanes remote from signals.	0
	Personal Security	Safety of people in public places by ensuring public places are well lit and able to be observed by nearby residents and/or passers by. In this context, 'public places' refer to the public road reserves and adjacent places where members of the public are entitled to be. (as in "Crime Prevention Through Environmental Design" (CPTED))	Railway overpass and high walls in central Ashburton reduces personal security. Little change elsewhere.	-1
	Emergency Services	Ability of emergency services to respond quickly to emergencies in all parts of the district, but with a particular emphasis on urban areas where events are more common. Influenced by distance of travel, number of intersections to cross and traffic density.	Little change in access for emergency services. Additional lanes may reduce delays for emergency services especially at peak times.	1
	Lifeline	The bridge carries utilities (water supply, telecommunications, electricity) across the river. Ability to maintain essential utilities to communities in the event of a civil defence emergency (flood, earthquake etc). Most effectively achieved through duplication.	Major events which affect services on existing bridge (e.g. washout or slumping of approaches) also likely to affect new bridge.	0
	Route Security	Ability to provide reasonable access in the event of a local incident (breakdown, accident etc), or major emergency (natural hazard) closing the existing bridge or approach.	Provides alternative route for isolated event, but proximity to existing bridge may increase vulnerability to events which affect existing bridge.	1

Ashburton 2nd Bridge Additional Investigation Option Assessment - February 2011

	4 Laning of SH1			
	Criteria	***Exemplified by***	***Comments***	***Rating***
Social	**Accessibility**	Ability to get to key destinations within town, including homes, employment, education, medical, recreation, and shopping. Includes walking, cycling, private motor vehicle, public transport, freight. Often a particular issue at peak times.	Private properties (including business premises) and minor side roads likely to be left in / left out only. Right turning traffic will only cross median at designated crossing points - reduces accessibility within Ashburton and Tinwald. Rail overpass likely to result in closure of South St, Dobson St & Kermode St (east & west), significantly reducing accessibility.	**-2**
	Community Severance	The splitting of sectors of a community by a physical & perceived barrier (includes road & traffic). At town level & street level.	Major 4 lane road with limited crossing points increases severance through Ashburton and Tinwald. Rail overbridge and approaches significantly increases east west severance between the river and Moore St.	**-2**
	Active Transport	Promoting active transport (e.g. walking and cycling as means of travel to school and workplaces) by improving and extending walking and cycling infrastructure, and improving environmental conditions for walking and cycling (i.e. a safer, more pleasant environment with good quality surfaces); often involves increasing the separation between vehicular traffic routes (particularly those involving heavy vehicles) and pedestrian/cyclist routes.	Small improvement in pedestrian & cycle facilities on new route. No significant change to recreation walking and cycling networks.	**1**
	Land	Ease of land acquisition Number of properties requiring partial or full acquisition. Houses and other buildings requiring demolition. Dislocation of property owners.	Land required from 14 properties (9 private properties - remainder rail or Council land). Little property severance. No demolition of homes identified at this stage.	**-1**
Cultural	**Iwi**	Impacts on local and regional Iwi. Culturally important sites, accidental discovery.	Yet to discuss with Iwi.	
	Heritage	Impact on heritage sites, buildings etc & archaeology.	Impact on Heritage site near South St.	**-1**
Environ	**Environment - Water**	Impact on water quality, and river hydraulics.	Little impact on water quality. New bridge would need to be designed to minimise hydraulic impacts between existing and new bridges - locate piers at similar locations to existing piers to minimise ability for debris to accumulate between piers.	**0**
	Amenity & Public Health	Changes to amenity values, e.g. noise levels, air quality, vibration, visual effects and streetscape. In severe cases has impacts on personal health.	Little change in amenity for residential areas in Tinwald, but significant reduction in open-space amenity in the vicinity of the overpass and wall structures near Kermode St and River Terrace. Loss of skateboarding park.	**-1**
Economic	**Cost**	Total cost - land & construction. Whole of life cost. Local ratepayer share.	Estimated total cost $41M to $51M. NZTA subsidy unlikely. Likely ADC cost $41M to $51M.	**-1**
	Economic Development	Impact on local businesses operating in Ashburton and Tinwald. Cost to users, including freight operators (including flow on effects).	Likely significant impacts on local businesses on SH1 in Ashburton & Tinwald due to loss of parking and reluctance of SH through traffic to park on one side and cross 4 lanes.	**-2**
	Planning for the Long Term	Addressing short, medium, and long term transportation issues throughout the next 50 years.	Land acquisition, detailed design & construction likely to take more than 5 years. Therefore cannot address short term issues on SH1. Addresses growth in SH through traffic. Does not address long or short term growth of east Tinwald.	**0**
	Sewer Replacement Opportunity	Existing sewer siphon under Ashburton River near the oxidation ponds is likely to need replacement in the medium to long term. A new bridge may provide a viable route for the sewer, and thereby reduce some of the costs of sewer replacement.	Will not readily connect to trunk sewer on northern riverbank. Will not readily connect to relief sewer on Trevors Rd.	**0**
			Total	**-8**

Ashburton 2nd Bridge Additional Investigation Option Assessment - February 2011

Tinwald Traffic Signals

Assumptions about rating

Ratings are relative to the existing route option.
Ratings are a composite for the whole route option and may incorporate a mix of ratings for sub-sections of the route.

Assumptions about traffic patterns

Inter-district through traffic (i.e. traffic which is not starting or finishing in Ashburton): All inter district traffic will use existing State Highway

Local traffic (including traffic between Ashburton and surrounding rural areas): All local traffic between Ashburton and Tinwald will use existing State Highway.

Signalised intersections in Tinwald will allow traffic to enter SH1. However signals will be likely to favour through traffic, resulting in delays for local traffic
Likely increase in traffic on Graham St

Tinwald Traffic Signals				
	Criteria	***Exemplified by***	***Comments***	***Rating***
Social	**Safety**	Pedestrian, cyclist and motorist safety.	Improved safety for some vehicles turning right onto SH1 in Tinwald. Improved safety for some west Tinwald residents crossing SH 1 (including Tinwald school pupils from west Tinwald).	1
	Personal Security	Safety of people in public places by ensuring public places are well lit and able to be observed by nearby residents and or passers by. In this context, 'public places' refer to the public road reserves and adjacent places where members of the public are entitled to be. (as in "Crime Prevention Through Environmental Design" (CPTED))	No change in major pedestrian or cyclist routes - little change in personal security.	0
	Emergency Services	Ability of emergency services to respond quickly to emergencies in all parts of the district, but with a particular emphasis on urban areas where events are more common. Influenced by distance of travel, number of intersections to cross and traffic density.	Little change for emergency services.	0
	Lifeline	The bridge carries utilities (water supply, telecommunications, electricity) across the river. Ability to maintain essential utilities to communities in the event of a civil defence emergency (flood, earthquake etc). Most effectively achieved through duplication.	No improvements for water, telecommunication & power.	0
	Route Security	Ability to provide reasonable access in the event of a local incident (breakdown, accident etc), or major emergency (natural hazard) closing the existing bridge or approach.	No improvements for route security.	0
	Accessibility	Ability to get to key destinations within town, including homes, employment, education, medical, recreation, and shopping. Includes walking, cycling, private motor vehicle, public transport, freight. Often a particular issue at peak times.	Signals will provide some improvement in access to SH1 in Tinwald. Signals are likely to be phased to suit through traffic, so some delays are likely to continue. Signals may provide gaps in traffic for traffic to enter SH1 at intersections near to signals. Small improvement in accessibility between south east Tinwald and Ashburton.	1

Ashburton 2nd Bridge Additional Investigation Option Assessment - February 2011

	Tinwald Traffic Signals			
	Criteria	***Exemplified by***	***Comments***	***Rating***
Social	**Community Severance**	The splitting of sectors of a community by a physical & perceived barrier (includes road & traffic). At town level & street level.	Some improvement in community severance due to improved access across SH1at signals in Tinwald.	1
	Active Transport	Promoting active transport (e.g. walking and cycling as means of travel to school and workplaces) by improving and extending walking and cycling infrastructure, and improving environmental conditions for walking and cycling (i.e. a safer, more pleasant environment with good quality surfaces); often involves increasing the separation between vehicular traffic routes (particularly those involving heavy vehicles) and pedestrian/cyclist routes.	Improved access between west Tinwald and Tinwald school may encourage some pupils to walk or cycle. No significant change to recreation walking and cycling networks.	1
	Land	Ease of land acquisition. Number of properties requiring partial or full acquisition. Houses and other buildings requiring demolition. Dislocation of property owners.	Land required from 4 properties. No property severance or demolition identified at this stage.	0
Cultural	**Iwi**	Impacts on local and regional Iwi. Culturally important sites, accidental discovery.	Yet to discuss with Iwi.	
	Heritage	Impact on heritage sites, buildings etc & archaeology.	No impact identified at this stage.	0
Environ	**Environment - Water**	Impact on water quality, and river hydraulics.	Little change to environment impacts.	0
	Amenity & Public Health	Changes to amenity values, e.g. noise levels, air quality, vibration, visual effects and streetscape. In severe cases has impacts on personal health.	Little change to amenity. Possible reduction in amenity on Graham or Agnes St offset by redistribution of traffic from other streets.	0
Economic	**Cost**	Total cost - land & construction. Whole of life cost. Local ratepayer share.	Estimated total cost $1M to $2M. Wholly on SH 100%NZTA funding possible. Likely ADC cost $0.	2
	Economic Development	Impact on local businesses operating in Ashburton and Tinwald. Cost to users, including freight operators (including flow on effects).	Little impact on local businesses. Minor delays to through traffic (including freight).	0
	Planning for the Long Term	Addressing short, medium, and long term transportation issues throughout the next 50 years.	Possibly built in short term. Addresses some short term issues accessing SH1. Does not address medium to long term growth in through traffic or local growth.	0
	Sewer Replacement Opportunity	Existing sewer siphon under Ashburton River near the oxidation ponds is likely to need replacement in the medium to long term. A new bridge may provide a viable route for the sewer, and thereby reduce some of the costs of sewer replacement.	Will not readily connect to trunk sewer on northern riverbank. Will not readily connect to relief sewer on Trevors Rd.	0
			Total	**6**

Ashburton 2nd Bridge Additional Investigation Option Assessment - February 2011

Summary of Option Assessment - Feb 2011

	Social									Cultural		Enviro		Economic						
Weighting Version 1	2.5	1	1.5	1	2	2	1	1	2	1	1	1	2	3	2	2	1			
Weighting Version 2	2	1	1	1	2	2	1	1	2	1	1	1	2	2	2	2	1			
Option	**Safety**	**Personal Security**	**Emergency Services**	**Lifeline**	**Route Security**	**Accessibility**	**Community Severance**	**Active Transport**	**Land**	**Iwi**	**Heritage**	**Environment - Water**	**Amenity & Public Health**	**Cost**	**Economic Development**	**Planning for the Long Term**	**Sewer Replacement Opportunity**	**Raw Total**	**Weighted Total - Version 1**	**Weighted Total - Version 2**
Outer Bypass	0	0	0	0	2	0	0	1	-2		0	0	0	-2	0	0	1	0	-4	-2
Inner Bypass	0	0	0	1	2	0	0	1	-2		0	0	-1	-2	0	0	1	0	-5	-3
Chalmers - Rural	1	0	1	2	2	2	1	1	0		0	0	-1	1	1	2	0	13	23	21
Chalmers - Urban	2	1	1	2	2	2	1	2	-1		0	0	-1	1	1	2	0	15	26	23
Chalmers - Grove	1	2	1	2	2	2	-1	1	0		0	0	-2	1	1	1	0	11	19	17
Melcombe - level xing	0	0	1	1	1	1	-1	1	-2		0	0	-2	-1	-1	0	0	-2	-7	-6
Melcombe - Rail overpass	1	0	1	1	1	1	-1	1	-1		0	0	-2	-1	-1	0	0	0	-2	-2
4-laning SH1	0	-1	1	0	1	-2	-2	1	-1		-1	0	-1	-1	-2	0	0	-8	-15	-14
Traffic Signals in Tinwald	1	0	0	0	0	1	1	1	0		0	0	0	2	0	0	0	6	13	10

Notes:
Refer to Drawings for Option Layout
Refer to detailed assessment of each option for criteria description

Key

-2	Has significant negative impact
-1	Has moderate negative impact
0	Has little or no impact
1	Has moderate positive impact
2	Has significant positive impact