

## **Appendix L Appraisal Summary Tables**

# Appraisal Summary Table

Date: 21/09/2021	Evaluation Period: (baseline and forecast year) 2021-2041	Option Name: Chalmers Avenue Bridge	This is the preferred option YES
Problem/opportunity statement:	Investment objectives:	How project gives effect to GPS:	How project gives effect to local community outcomes:
<p><b>Connectivity</b> An absence of route choice contributes to more traffic on SH1. This discourages, or stops people being able to, make journeys they otherwise would, creating social disconnect and lack of a 'one community' feeling</p>	<p><b>Investment Objective</b> Ensure residents of Tinwald can easily access key community facilities in Ashburton by a variety of modes during all times of the year and during a major event (e.g. flood or earthquake) by 2026.</p> <p><b>Preferred option</b> The option will increase the river crossing capacity and would reduce the length of any detour route to less than 10 km in the event that a single bridge was closed.</p> <hr/> <p><b>Investment Objective</b> Improve travel time reliability for journeys within and between Ashburton and Tinwald so that weekday peak-hour journey times do not exceed off-peak journey times by more than 2 minutes.</p> <p><b>Preferred option</b> Overall, the Chalmers Avenue Bridge option provides greater reduction in travel time delays for local travel compared with the SH1 bridge duplication.</p>	<p>Meeting this IO aligns directly with the 'Inclusive Access' and 'Resilience &amp; Security' transport outcomes.</p> <p><b>Short term</b></p> <ul style="list-style-type: none"> <li>Improvements to the merge areas at the SH1 / South Street intersection will contribute to reducing travel time delays on the road network and contribute to reducing the perception that the bridge represents an obstacle to travel between the two communities.</li> </ul> <p><b>Medium term</b></p> <ul style="list-style-type: none"> <li>The increase in capacity that would be created by a second bridge will eliminate the river crossing as a constraint to travel between the Tinwald and Ashburton communities.</li> <li>A reduction in traffic on the state highway will reduce severance.</li> </ul>	<p>Provision of a second bridge at Chalmers Avenue provides some route choice for crossing the river and increases the resilience of the transport network as it is less likely that both bridges would be closed at the same time.</p> <p>The volume of traffic on the Chalmers Avenue bridge is relatively moderate, and the modelling suggests that it only attracts local traffic. This means that there is a low risk of the route being used for state highway through traffic, which is a positive outcome for local residents. I.e. a main benefit is to people living along this route</p>
<p><b>Travel choice</b> Limited (or poor quality) facilities for sustainable modes makes it difficult to achieve long-term environmental and liveability objectives.</p>	<p><b>Investment Objective</b> Increase the number of peak hour active mode journeys across the river from 25 to 50 per hour by 2026.</p> <p><b>Preferred option</b> It is anticipated that a high quality, separated facility for pedestrians and cyclists would be provided on any new bridge. This would create travel mode choice and would be expected to contribute to promoting active modes. The lower traffic volumes on Chalmers Avenue would make this a more attractive route than SH1 but could require less direct travel for many trips such as between Tinwald and the town centre which could reduce its attractiveness.</p>	<p>Meeting this IO aligns directly with the 'Inclusive Access', 'Healthy and Safe People' and 'Environmental Sustainability' transport outcomes.</p> <p><b>Short term</b></p> <ul style="list-style-type: none"> <li>Clip-on passing lanes for cyclists will improve journey times for existing cyclists, but unlikely to create notable mode shift.</li> </ul> <p><b>Medium term</b></p> <ul style="list-style-type: none"> <li>A new bridge at Chalmers Avenue, along with the extension of Chalmers Avenue through to Grahams Road, will provide high quality facilities for active travel. The facility will provide an attractive alternative to the car for people living in Tinwald to travelling to the town centre or through to the Ashburton Business Estate.</li> <li>The strength of the alignment is partly dependent on the timeframe for the new bridge – the earlier it is constructed the greater the strength, as the existing deficiencies in the quality of active travel infrastructure across the SH1 bridge are significant and a barrier to achieving mode shift.</li> <li>The Chalmers Avenue bridge will enable cross-river recreational use. Currently mountain bike users generally keep to either one side of the river or the other, actively avoiding crossing the SH1 bridge. The bridge unlocks potential new recreational users and encourages longer cycling journeys.</li> <li>A potential bus service (feasibility study required) would provide another alternative, particularly for elderly residents who are unable to drive or physically unable to cycle.</li> </ul>	<p>The new bridge will provide space for active modes as well as motorised vehicles. The bridge provides attractive new transport choices for people living in eastern Tinwald and working in Ashburton.</p>
<p><b>Safety</b> High traffic volumes make it difficult for people to travel along, across, or onto SH1. This increases the likelihood of injury crashes and delays emergency services.</p>	<p><b>Investment Objective</b> Improve the safety level of service (LOS) for cyclists from LOS C to LOS B or better by 2026.</p> <p><b>Preferred option</b> Since the Chalmers Avenue Bridge reduces traffic volumes on SH1 and reduces the demand for right turns onto SH1 in Tinwald, it is expected to reduce the potential for crashes at intersections and along the highway. This will contribute to greater reductions in collective and personal risk compared with the SH1 Duplication option.</p> <hr/> <p><b>Investment Objective</b> Reduce the risk of crashes at intersections by reducing the demand for right turn demands by 2031.</p> <p><b>Preferred option</b> The Chalmers Avenue option encourages traffic onto alternative routes which do not require the more dangerous right turn onto the state highway.</p>	<p>Meeting this IO aligns directly with the 'Healthy and Safe People' transport outcome.</p> <p>The SH1 corridor through Ashburton and Tinwald has a medium collective risk rating as there are few DSIs and so a significant safety improvement cannot be achieved.</p> <p>The Chalmers Avenue bridge will provide safety improvements by proving a high quality active mode connection across the river and by reducing volumes on SH1, will reduce the risk of crashes at intersections. Also:</p> <ul style="list-style-type: none"> <li>The second bridge will reduce traffic on the state highway and the number of vehicles looking to access from the side roads. This reduces the likeliness of both rear-end and turning movement related crashes.</li> <li>Delays for emergency vehicles will reduce.</li> <li>The programme supports the safety objectives of the Tinwald Corridor Improvements project.</li> </ul>	<p>The new bridge will provide a safe route for active modes, an alternative route for emergency vehicles and by reducing travel demands on SH1, make crossing SH1 easier.</p>
<p><b>Economic prosperity</b> Increasing traffic and constrained capacity on SH1 results in worsening travel time reliability between Tinwald and Ashburton. This impacts freight connections and economic prosperity.</p>	<p><b>Investment Objective</b> Improve travel time reliability between the centre of Ashburton and Tinwald so that weekday peak-hour journey times are less than two minutes longer than off-peak journey times by 2026.</p> <p><b>Preferred option</b> The analysis of the forecast travel time delays on the road network compared with free-flow travel times both locally and along SH1 demonstrates that the Chalmers Avenue Bridge provides greater benefits than the SH1 Duplication option. Average delays of less than 2 minutes will be achieved for local travel during the weekday evening peak period and that average delays for movement along the SH1 corridor will be less than 4 minutes.</p>	<p>Meeting this IO aligns directly with the 'economic prosperity' and 'resilience &amp; security' transport outcomes.</p> <p><b>Short term</b></p> <ul style="list-style-type: none"> <li>The extensions to the SH1 / South St downstream merge areas will contribute to reducing the congestion and delays and hence improving travel time reliability.</li> </ul> <p><b>Medium term</b></p> <ul style="list-style-type: none"> <li>The additional capacity that would be created by a second bridge will reduce the potential for congestion and delays. This will improve travel time reliability reducing transport costs for freight</li> </ul>	<p>The new bridge allows for some distribution of travel demands to Chalmers Avenue which will improve the efficiency of SH1 and reduce delays. It will also create opportunity to expand residential development in Tinwald.</p>

1. Summary of Non-Monetised Impacts (Description)	2. Summary of Financial Impacts (nominal, non-discounted)		3. Summary of Monetised Option Impacts (present value, discounted)	
Summary description of non-monetised measures and impacts	Capital Costs	TBC	Total Monetised Benefits, <u>excluding</u> Wider Economic Benefits (WEBs)	
	Operating Costs	TBC	Total Monetised Benefits, <u>including</u> Wider Economic Benefits (WEBs)	
	Total Financial Costs	TBC	Total Economic Costs BCR (excluding WEBs) BCR (including WEBs)	

Transport Outcomes	Non-Monetised Impact: (description in numerical or narrative terms)				Monetised Impact: (description in dollar terms in real terms, non-discounted)	
	Name of Measure:	Baseline:	Do Minimum Impact:	Option Impact:	Do Minimum Impact:	Option Impact:
<b>Healthy and safe people</b>						
1.1 Impact on social cost and incidents of crashes	1.1.3 Deaths and serious injuries	n/a	The risk of crashes occurring on SH1 will increase as volumes and congestion increase. However, the low vehicle speeds caused by congestion is likely to reduce the severity of injuries when crashes occur.	Improving the efficiency of SH1 will reduce the risk of crashes occurring.	TBC	TBC
2.1 Impact on perceptions of safety and security	2.1.1 Access - perception	n/a	Minor improvements to the SH1 clip-ons to provide better passing opportunities will ease its use by existing users but does not improve safety or security	The Chalmers Avenue bridge will include separated facilities for pedestrians and cyclists that will make active travel safer for all users	n/a	n/a
3.1 Impact of mode on physical and mental health	3.1.1 Physical health benefits from active modes	n/a	Minor improvements to the SH1 clip-ons to provide better passing opportunities will ease its use by existing users but is unlikely to attract new users	The Chalmers Avenue bridge will include separated facilities for pedestrians and cyclists that will make active travel across the river a practical option for many destinations.	n/a	n/a
<b>Resilience and security</b>						
4.1 Impact on system vulnerabilities and redundancies	4.1.1 Availability of a viable alternative to high-risk and high-impact route	n/a	Transport network still has a single point failure mode with only one connection across the river.	The second bridge will reduce the likelihood that both connections would be closed at the time.	n/a	n/a
<b>Economic prosperity</b>						
5.1 Impact on system reliability	5.1.2 Travel time reliability - motor vehicles	n/a	Congestion on SH1 will become a regular occurrence on weekdays by 2031	The second bridge will reduce traffic volumes on SH1 which will enable it to operate more efficiently and provide more reliable travel times	TBC	TBC
6.4 Wider economic benefit (regional economic development)	5.2.1 Spatial coverage - freight	n/a	Congestion on SH1 will become a regular occurrence on weekdays by 2031 which will affect reliability of freight movement	The second bridge will provide more efficient travel times for freight by reducing congestion within the township.	TBC	TBC
<b>Environmental sustainability</b>						
8.1 Impact on greenhouse gas emissions	8.1.1 CO2 emissions	n/a	Increasing congestion will contribute to higher greenhouse gas emissions	The second bridge reduces overall network travel times and distances compared with the Do-Min and so will reduce emissions in comparison.	TBC	TBC
<b>Inclusive access</b>						
12.1 Impact on Te Ao Māori	12.1.1 Te Ao Māori	n/a	No effect as there are changes outside the existing transport corridor	TBC at DBC stage	n/a	n/a
10.2 Impact on mode choice	10.1.1 People - throughput of pedestrians, cyclists and public transport boardings	n/a	Minor improvements to the SH1 clip-ons to provide better passing opportunities will ease its use by existing users but is unlikely to attract new users	The Chalmers Avenue bridge will include separated facilities for pedestrians and cyclists that will make active travel across the river a practical option for many destinations.	n/a	n/a

#### Rationale for option selection decision

The Chalmers Avenue bridge option is preferred because:

- It will more strongly deliver the Investment Objectives than duplicating the SH1 bridge.
- The modelling indicates that the Chalmers Avenue bridge will attract up to 500 vehicles per hour by 2041. This level of traffic diversion is enough to keep the state highway operating efficiently during all peak periods out to 2041 (and likely beyond).
- The Chalmers Avenue bridge reduces traffic on the state highway, whilst the SH1 duplication encourages more traffic through this single corridor. This will reduce, rather than increase, the east-to-west severance issues.
- The Chalmers Avenue bridge reduces the number of vehicles turning right onto the state highway from give-way controlled intersections in Tinwald and reduces the likelihood of turning related crashes.
- The Chalmers Avenue bridge directly supports the council's future land use plan, with residential growth targeted for east Tinwald/Lake Hood and employment growth in the Ashburton Business Estate.
- The Chalmers Avenue bridge and new road through to Grahams Road can be constructed almost entirely offline, with minimal impact to the community.
- The Chalmers Avenue bridge is technically less complicated to build than a SH1 duplication with fewer constraints (e.g. railway line) and limited property impacts. The SH1 option has potentially significant property and constructability challenges to overcome. Waka Kotahi have identified that it will be very difficult to build a new bridge on either the upstream or downstream sides of the existing bridge.
- Since a designation for the Chalmers Avenue bridge was put in place as part of the 2014 Notice of Requirement, this will reduce some of the potential challenges associated with property acquisition and means that more information is already available in terms of potential effects on the environment for the resource consent application.
- The Chalmers Avenue bridge directly aligns with council's walking and cycling strategy which promotes improved connections across the river at both SH1 and at Chalmers Avenue.