

# ASHBURTON-TINWALD CONNECTIVITY BUSINESS CASE STRATEGIC CASE

**Ashburton District Council**

16 September 2020



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## Abbreviations

AADT	Annual Average Traffic Volume
ADC	Ashburton District Council
ATC	Ashburton-Tinwald Connectivity
CBD	Central Business District
DBC	Detailed Business Case
ILM	Investment Logic Map
LOS	Level of Service
NOR	Notice of Requirement
PBC	Programme Business Case
SH1	State Highway 1
SIA	Social Impact Assessment
SSBC	Single Stage Business Case
vpd	Vehicle movements per day
vph	Vehicle movements per hour

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# 1. Introduction

## 1.1 Overview

The purpose of the Ashburton-Tinwald Connectivity (ATC) business case is to demonstrate the need for wider investment across the Ashburton and Tinwald transport network. The focus is around achieving a total transport system solution that will improve connectivity across the Hakatere (Ashburton) river.

This strategic case outlines the benefits of investing in improving connectivity, examining available evidence for the problems and identifies key performance indicators (KPIs) to measure the success of investment over time.

If approved by Ashburton District Council (ADC) and Waka Kotahi NZ Transport Agency (Waka Kotahi), this report will form Part A of a Detailed Business Case (DBC). It has been prepared in accordance with the principles outlined in the Waka Kotahi Business Case guidelines.

## 1.2 Project area

State Highway 1 (SH1) is a key strategic transport route for the South Island that links Picton in the north with Bluff in the south via all major towns and cities along the east coast. The town of Ashburton is located on the northern side of the SH1 bridge over the Hakatere River, with Tinwald on the opposite (southern) side of the river.

The project area refers to the geographic extent to which potential interventions could be introduced. In the case of this business case, the extent of the project area covers the towns of Ashburton and Tinwald. The area of influence of the business case would however be far wider reaching, potentially extending out as far as Christchurch (to the north) and Timaru (to the south).

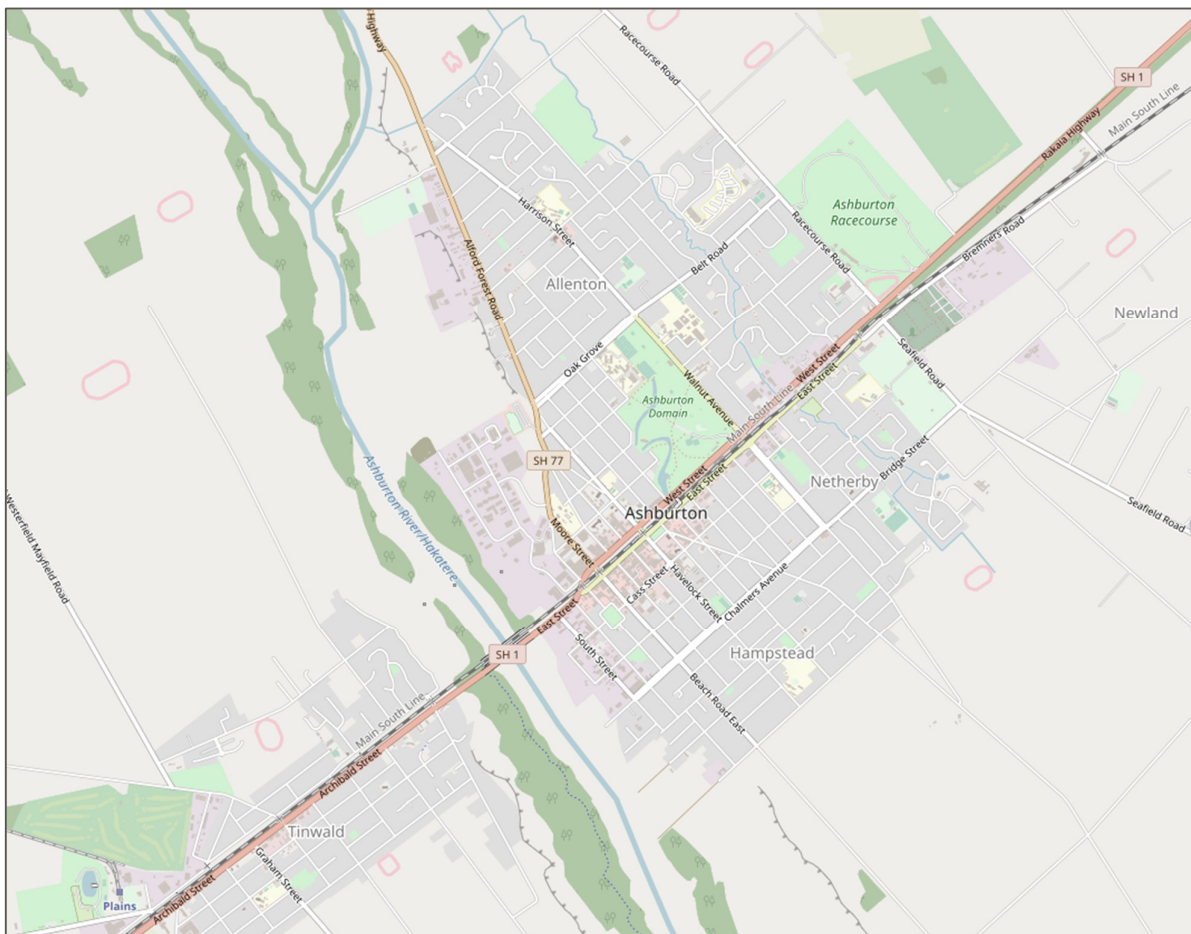


Figure 1-1: Project area

## 1.3 Drivers for change

The need for investing in improving connectivity between Ashburton and Tinwald is being driven by:

- The need to support population growth.
- The need to ensure people can move safely and easily across the river.
- The need to ensure that inter-regional freight is moved efficiently.
- The need to provide locals with alternative travel modes to motor vehicles.

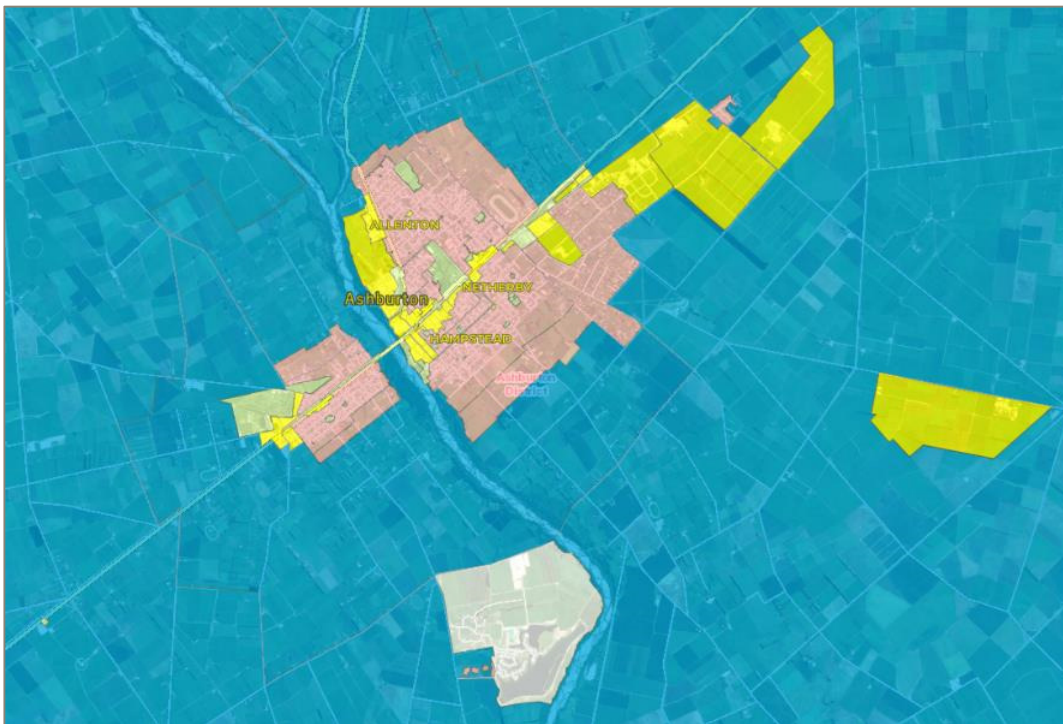
Further details around each of these key drivers is provided below.

### 1.3.1 Supporting population growth

More and more people are choosing to live in the local area. Over the last five years<sup>1</sup> Canterbury was the fourth fastest growing region in New Zealand with 1.8% growth per annum<sup>2</sup> (compared to 1.6% nationally) and the number of Ashburton residents increased by around 1,750 people.

This population growth has been focused north of the river, with 400 new homes constructed in Ashburton compared to just 100 in Tinwald between 2013 and 2018. Over the next 25-30 years an expected additional 2,100 homes are planned to be built north of the river, with a further 1,300 to the south. This will put significant pressure on the existing SH1 bridge (which provides the only connection between Tinwald and Ashburton), especially if locals continue to rely on their car for even short journeys.

ADC land zoning maps, provided as Figure 1-2, identify where these new homes could go.



**Figure 1-2: Ashburton District Plan zoning<sup>3</sup>**

The maps show:

- Large residential areas (pink) to the east and west of SH1.
- Business zoned land (yellow) located close to SH1 near the Ashburton CBD, a large business park to the north, meat processing plant and a small light industrial area to the south of Tinwald.

<sup>1</sup> Comparison of the 2013 and 2018 census

<sup>2</sup> <https://www.stats.govt.nz/information-releases/subnational-population-estimates-at-30-june-2019-provisional>

<sup>3</sup> Canterbury Maps



- The Lake Hood Special Zone could increase from 200 to 500 dwellings.
- Immediately south of the river there is about 13.8 ha of largely undeveloped land south of the existing residential area. After allowing for roads and reserves, this area would be sufficient to allow for development of about 300 new dwellings<sup>4</sup>.

As directed by Government's recently released National Policy Statement on Urban Development<sup>5</sup> (August 2020), councils need to ensure a well-functioning urban environment for all people, communities, and future generations. This means:

- Enabling all people and communities to provide for their social, economic, cultural wellbeing, and health and safety, now and into the future.
- Providing sufficient development capacity to meet the different needs of people and communities.

As such, new development needs to be integrated with the transport network – noting that in the first instance, this typically means optimising existing infrastructure.

### 1.3.2 Moving people safely and easily across the river

Ashburton plays a vital important role for the local economy by facilitating through movement of regional trips to key facilities such as hospitals, ports, and the Christchurch Airport.

There will always be a need to maintain the efficiency of through trips on SH1, particularly from an economic perspective because there are no viable alternative routes for regional traffic. This means there is poor network resilience with all movements between Ashburton and Timwald highly vulnerable to unforeseen events (e.g. crashes). The corridor also provides an important connection for tourists and for regional journeys (e.g. people travelling to/from Timaru and Dunedin).

Figure 1-3 shows that the SH1 bridge carries very high volumes of traffic, approximately 24,000 vehicles per day (vpd)<sup>6</sup>. This is because it provides the only river crossing, which means that local and regional traffic is channelled onto this single corridor.

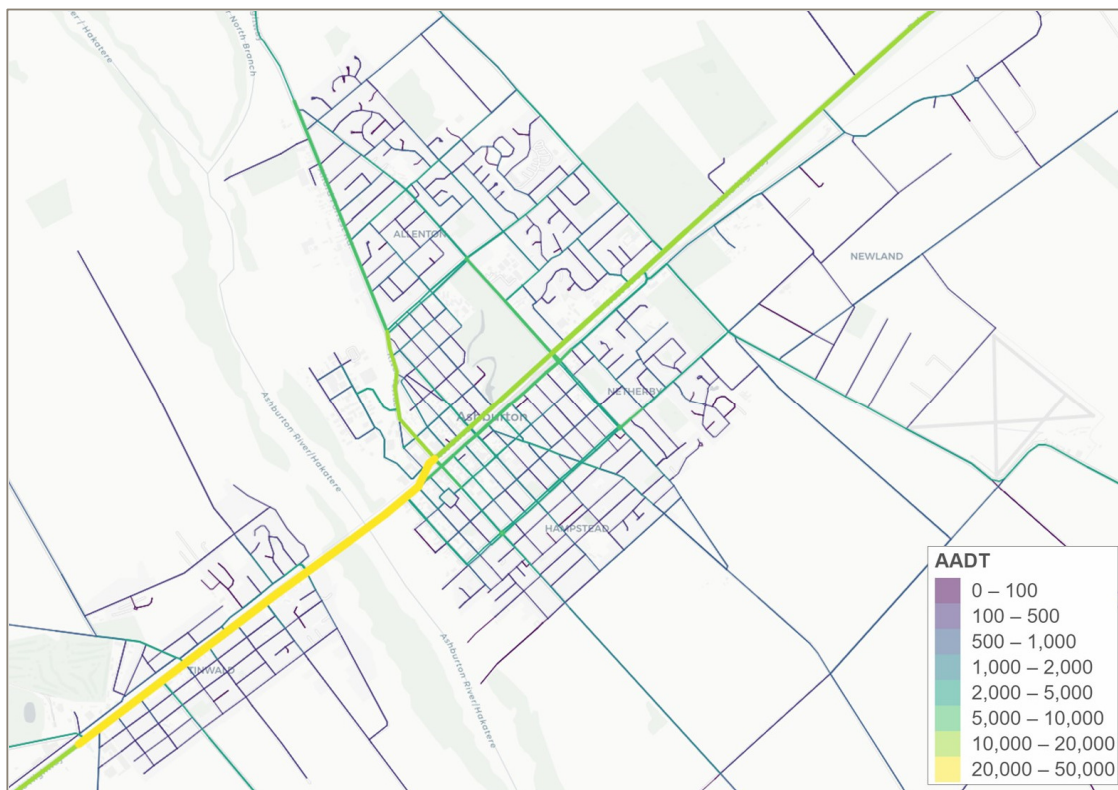


Figure 1-3: Traffic volumes (daily)

<sup>4</sup> Based on the minimum lot size set out in the District Plan (360sqm)

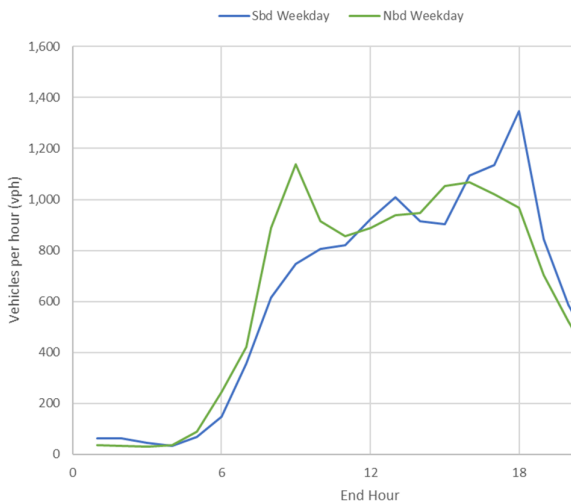
<sup>5</sup> <https://www.mfe.govt.nz/about-national-policy-statement-urban-development>

<sup>6</sup> This is roughly equivalent to the volume of traffic to that being carried on SH6 through Richmond and Nelson.

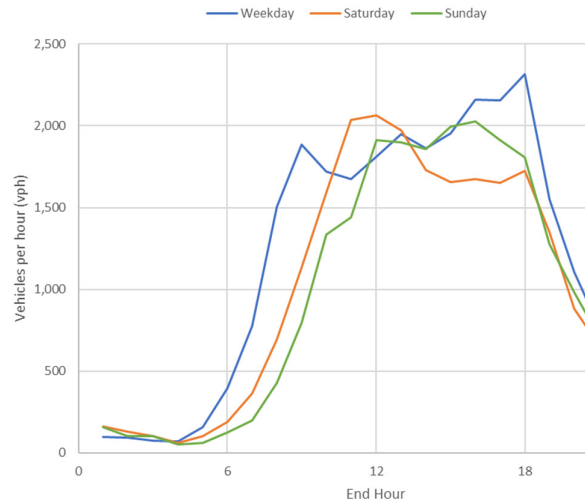
The evidence to show that at times of the day, the SH1 bridge is operating to the limits of its capacity.

An urban highway can typically accommodate about 1,200 vehicles per hour (vph) per lane<sup>7</sup>, and as shown in Figure 1-4, southbound traffic volumes currently exceed this level for one to two hours of the day. While the northbound hourly volumes are lower, they will exceed 1,200 vph on busier weekdays.

Figure 1-5 shows how these high volumes occur also on the weekend (around midday). This means that the capacity of the SH1 is often exceeded on the weekend, and especially during holiday weekends when it is recognised as one of the national congestion hotspots.<sup>8</sup>



**Figure 1-4: Weekday hourly volumes by direction (90<sup>th</sup> percentile week<sup>9</sup>)**



**Figure 1-5: Hourly variation in traffic volumes - 90<sup>th</sup> percentile week**

### 1.3.3 Providing alternatives to the car

A key priority of the Draft GPS for Land Transport is “*providing people with better travel options to access social and economic opportunities.*” This is also reflected in ADC’s Draft Walking and Cycling Strategy (2020) which sets out a vision of “*more people, more active, more often*” and its supporting objectives of:

- A coherent, safe, and connected urban walking and cycling environment.
- A quality fit for purpose recreational walking and cycling network that connects to key destinations.
- Ensuring the urban and rural active mode networks integrate to create an accessible district.
- A District that is committed to walking and cycling for health, well-being, safety, environmental and economic reasons.

The current active mode facilities provided on the SH1 bridge and generally across the local road network provide people with poor travel choice, and do not meet any of the objectives outlined in the strategy. Along with poor active mode provisions there are also currently no public transport services (aside from school buses) in Ashburton. These issues are discussed further in Section 5.

There is a need to provide better travel choice to enable ADC to meet overarching mode share and national climate change objectives<sup>10</sup>.

<sup>7</sup> Dependent on the influence of spacing between signalised intersections and lengths of merge lanes. For example - the merge area south of the East Street / South Street signals is short and is likely to reduce the road capacity below this level for southbound travel.

<sup>8</sup> [www.nzta.govt.nz/assets/traffic/Holiday-Hotspots/Easter-2018-Hotspots.pdf](http://www.nzta.govt.nz/assets/traffic/Holiday-Hotspots/Easter-2018-Hotspots.pdf)

<sup>9</sup> This represents traffic volumes that would only be exceeded in the five busiest weeks of the year which typically occur in late December and early January.

<sup>10</sup> <https://www.mfe.govt.nz/climate-change/climate-change-and-government/emissions-reduction-targets/about-our-emissions>

### 1.3.4 Moving freight efficiently

Over the last 15-20 years the local economy has been driven in large part by the farming sector, which now represents approximately 35% of the district's GDP. Going forward there is an expectation this will continue<sup>11</sup>, with the local economy forecast to grow by another third (2% p.a.)<sup>12</sup> over the next 15 years.

Growth in agriculture also brings opportunity to grow industries that provide support services (such as machinery and equipment manufacturing). However, this industry is dependent upon reliable inter-regional travel times and connections to ports in Timaru and Christchurch.

Figure 1-6 provides a representation of the freight demands through town. There are just less than 2,000 trucks passing over the SH1 bridge per day.



Figure 1-6: Freight demands (daily)

## 1.4 Previous investigations

The transport network in both Ashburton and Tinwald has been the subject of several studies in recent years. The most relevant have been summarised below.

### 1.4.1 Ashburton Transportation Study (2006)

The Ashburton Transportation Study (ATS) was jointly commissioned in 2006 by Waka Kotahi and ADC to identify the present and future transportation demands within the Ashburton urban area for the 20 year period through to 2026. The study also recommended measures to optimise the performance of the land transport system within Ashburton.

The ATS identified that:

- A second river crossing would be more beneficial for local traffic than inter-district traffic.
- There is a significant traffic pressure point at the SH1 bridge during peak hours, which will worsen as the town continues to grow.

<sup>11</sup> The three largest sectors (dairy cattle farming, meat and meat product manufacturing and sheep, beef cattle and grain farming) generate more than a third (34.6%) of the economic value in the district.

<sup>12</sup> Ashburton District Council - Economic Development Strategy and Action Plan (2017)



### 1.4.2 Ashburton Second Bridge Issues and Options (2010)

In 2010 a study was undertaken to better understand the opportunities and risks associated with introducing a second bridge across the Hakatere river. The report provided an assessment of the existing SH1 bridge, noting (in addition to issues raised in the ATS):

- Crash hot spots at intersections along SH1 through Ashburton, highlighting the difficulty of gaining safe access to the state highway.
- There are no viable alternative routes for this nationally strategic route, which presents a serious resilience risk. The existing bridge structure is also vulnerable to natural events (such as floods).

The study evaluated 12 alternative options for a second river crossing using a multi-criteria analysis (MCA) process. The two best scoring 'new bridge' options were:

- Chalmers Avenue to east of Tinwald.
- Chalmers Avenue to Grove Street.

### 1.4.3 Ashburton Second Bridge Additional Investigations (2011)

Additional investigations for various bridge options were undertaken in 2011 in anticipation of ADC lodging an application for a Notice of Requirement (NoR). This focused on eight options and included a comparative assessment of the options on a wide range of criteria.

The assessment concluded that bridge alignments that utilised Chalmers Avenue scored better than any other options. This reflected the premise that most of the traffic using the SH1 bridge was local.

This study also examined the option of installing signals in Tinwald. This option would provide improved access to SH1 from local roads but does not address the capacity issues along SH1.

### 1.4.4 Ashburton Second Bridge Social Impact Assessment (2013)

The conclusion of the social impact assessment was that the second bridge and access road in the proposed location would provide a positive contribution to the social wellbeing of the communities of Tinwald and Ashburton. A second bridge would provide a practical alternative route for many trips and improve access to a wide range of activities and facilities in Ashburton.

Aspects of this report have helped to inform the evidence base for this strategic case.

### 1.4.5 Notice of Requirement (2014)

A NoR for the preferred second urban bridge option (linking Chalmers Street onto Grahams Road) was approved in 2014 following a public hearing.

The NoR road alignment is shown as Figure 1-7.



**Figure 1-7: Road alignment for NOR**

## 1.5 Ongoing projects

### 1.5.1 Tinwald Corridor Programme Business Case (PBC)

A key driver for the PBC were the delays being experienced for side road traffic at most of the state highway intersections within Tinwald, the corresponding impact to safety, levels of service and delays.

The PBC for improvements to the SH1 Tinwald corridor recommended the following:

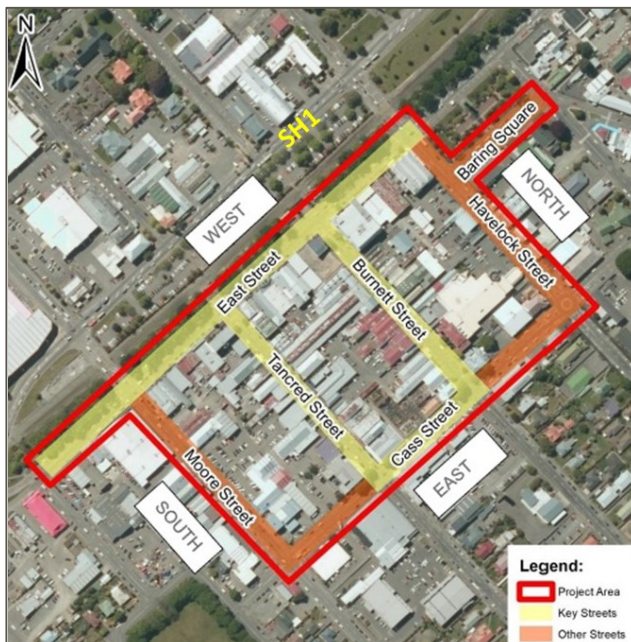
- Channelisation improvements such as merge lanes - i.e. left turn at Lagmhor Road and right turn merge lanes at Wilkins Street.
- An Indicative Business Case (IBC) for upgrades to the Grahams Street / SH1 intersection.
- Intersection improvements at Carters Terrace / Melcombe Street, Manchester Street / SH1, Johnstone Street / SH1 and Agnes Street / SH1. This could see some movement bans that would help deliver fewer conflicts and more channelisation.
- Minor intersection improvements for intersections south of Grahams Street.
- New crossing points established in conjunction with the above intersection improvements, and at two mid-block locations (Graham/Jane and Graham/Agnes).
- Development of a cycle network plan (currently being undertaken).
- Development of school travel plans.
- Speed limit review.

This project will soon progress into the Single Stage Business Case (SSBC) phase. It will be important to consider the interactions and dependencies between the Tinwald Corridor SSBC and the ATC business case so that a 'one network' solution is determined.

### 1.5.2 CBD renewal

ADC has been actively working to create a more vibrant town centre that will attract businesses back to the commercial centre through the Ashburton CBD Street renewal project. Good access to the CBD will be critical to promoting it as the primary commercial centre. The current primary access routes from the south and west are via East Street, Moore Street and Havelock Street.

Figure 1-8 shows the extent of the CBD Renewal study area. It will be essential to align the outcomes of the CBD renewal project with both the ATC business case and Tinwald Corridor SSBC.



**Figure 1-8: Ashburton CBD street renewal project**

## 2. Partners and key stakeholders

### 2.1 Partners

This ATC business case has been developed by ADC with Waka Kotahi as an investment partner.

The role of the project partners is outlined in Table 2-1.

**Table 2-1: Project partners**

Partners	Knowledge/involvement
Ashburton District Council	<ul style="list-style-type: none"><li>• Agency responsible for developing this project</li><li>• Study area is within the ADC unitary territory</li><li>• Investor in the ADC transport system</li><li>• Responsible for the provision and operation of the local road network and strategic transport planning for the region</li></ul>
Waka Kotahi	<ul style="list-style-type: none"><li>• The road controlling authority for the state highway network, are a funder of land transport activities and provide access to and regulation of land transport.</li><li>• Waka Kotahi's role is to work with a range of partners to plan, invest in, build, manage and operate the land transport system within the priorities and outcomes set in the GPS. The strategic priorities in the draft GPS 2021-24 are safety, improving freight connections, better travel options and climate change.</li></ul>

ADC's vision is to create "the *district of choice for lifestyle and opportunity*". They aim to grow and sustain Ashburton as a district that people choose for its high-quality lifestyle and strong business opportunities. The vision is supported by the following community outcomes:

- Residents are included and have a voice.
- A district of great spaces and places.
- A balanced and sustainable environment.
- A prosperous economy based on innovation and opportunity.

### 2.2 Key stakeholders

The strategic case has also been developed with input from representatives from:

- AA
- Mountain Bike Ashburton
- NZ Police
- NZ Road Transport Association
- Tinwald Cycle Group
- Tinwald School
- St Johns Ambulance



## 3. The need for investment

### 3.1 Outcome statement

A facilitated ILM workshop was held on 5<sup>th</sup> August 2020 to confirm the case for change. The workshop was attended by a wide range of stakeholders including the partner organisations and community representatives from the Tinwald school, emergency services, cycle advocate groups, and the heavy haulage industry. The minutes of the ILM workshop are provided in **Appendix A**.

A draft outcome statement was developed beforehand, which was intended to set the scene around what the business case seeks to achieve. This was presented to stakeholders and revised based on feedback. The agreed outcome statement is:

***“Delivering safe access to key social and economic opportunities across the Ashburton District”***

### 3.2 Understanding the issues

An interactive session was undertaken to understand the key issues. During this session four key problem themes emerged:

- Social connectivity
- Travel choice
- Safety
- Economy

Stakeholders then reorganised the issues into the various problem themes and discussed inherent causes and consequences. These are set out in Table 3-1 to Table 3-4.

Repeated causes, that are associated with multiple themes, are shown in **bold** text. The evidence base for each of the key underlying causes for each problem theme is presented within Sections 4 to 7.

**Table 3-1: ‘Social connectivity’ problem – causes and consequences**

Cause	Effect / Consequence
<ul style="list-style-type: none"><li>• <b>Lack of route choice</b></li><li>• <b>Lack of network resilience</b></li><li>• <b>High volume of inter-regional traffic</b></li><li>• <b>Employment focused on the northern side of the river</b></li><li>• <b>Increasing residential population</b></li><li>• <b>Key community facilities focused on the northern side of the river, including early childhood centres</b></li><li>• <b>High volume of trucks</b></li><li>• <b>High weekend and holiday peak demands</b></li><li>• <b>Land use development on either side of the river</b></li><li>• Proximity of the train tracks / crossing barriers. This can cause additional unexpected delays</li><li>• <b>Limited capacity on SH1</b></li><li>• Increasing number of retirees</li></ul>	<ul style="list-style-type: none"><li>• Longer journey times</li><li>• Unreliable journey times</li><li>• Lack of social connection - people do not make trips they would otherwise want to</li><li>• Severance (both across the state highway and the river)</li></ul>

**Table 3-2: 'Travel choice' problem – causes and consequences**

Cause	Effect / Consequence
<ul style="list-style-type: none"> <li>• <b>Lack of route choice</b></li> <li>• <b>Poor quality active travel facilities across the river (inc. narrow width of the SH1 bridge)</b></li> <li>• <b>Limited active mode provisions on local roads</b></li> <li>• Poor access to recreational routes</li> <li>• <b>Lack of public transport services</b></li> <li>• Poor lighting on SH1</li> </ul>	<ul style="list-style-type: none"> <li>• Reliance on the car for most journeys</li> <li>• Increased emissions</li> <li>• Personal security when crossing the bridge is compromised</li> <li>• People undertaking a recreational walking or cycling trip tend to drive to the start of the trail.</li> <li>• The mountain bike trails on either side of the river are poorly connected, which limits their full potential use (potential local tourism impact)</li> <li>• Cycling is unappealing, which means there is suppressed cycling demand.</li> <li>• Difficult to encourage the younger generation to use active modes. This makes it harder to align with GPS and achieve long term objectives</li> </ul>

**Table 3-3: 'Safety' problem – causes and consequences**

Cause	Effect / Consequence
<ul style="list-style-type: none"> <li>• <b>High volumes of traffic on SH1 during peak periods (inc. holiday periods)</b></li> <li>• <b>High volume of trucks</b></li> <li>• Oversize trucks using the state highway (sometimes during peak times). Including slow (and large) agricultural machinery using the bridge.</li> <li>• <b>Lack of controlled safe access points onto the state highway</b></li> <li>• <b>Poor quality active travel facilities across the river (inc. narrow width of the SH1 bridge)</b></li> <li>• <b>Limited active mode provisions on local roads</b></li> <li>• Northern approach lane geometry</li> </ul>	<ul style="list-style-type: none"> <li>• SH1 is busy all day</li> <li>• Slow travel speeds</li> <li>• Poor travel time / reliability</li> <li>• Difficult to enter the state highway for heavy vehicles</li> <li>• Difficult to merge (crash risk)</li> <li>• Difficult to cross SH1</li> <li>• Poor driver behaviour (e.g. merging like a zip)</li> <li>• Tendency for drivers to make dangerous manoeuvres</li> <li>• Emergency services are delayed</li> <li>• Increased likeliness of crashes (particularly rear end)</li> <li>• Increased safety risk (actual and perceived)</li> </ul>

**Table 3-4: 'Economy' problem – causes and consequences**

Cause	Effect
<ul style="list-style-type: none"> <li>• <b>Agricultural and residential development growth</b></li> <li>• <b>Employment focused on the northern side of the river</b></li> <li>• <b>Lack of route choice</b></li> <li>• <b>Limited capacity on SH1</b></li> </ul>	<ul style="list-style-type: none"> <li>• Reduction in economic productivity</li> <li>• Land value impact for East Tinwald (rental &amp; property)</li> <li>• Economic impact of poor network resilience</li> </ul>

### 3.3 Defining the problem

#### 3.3.1 Problem statements

Following the workshop, draft problem statements were formed based around the themes and identified causes and consequences. ADC agreed that it was appropriate to separate social connectivity and economy – as the economic benefits are quite distinct to the social ones.

1. **Social connectivity:** An absence of route choice contributes to more traffic on SH1. This discourages people from making journeys they otherwise would, creating social disconnect and lack of a 'one community' feeling.
2. **Safety:** 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.
3. **Travel choice:** Limited (or poor quality) facilities for sustainable modes makes it difficult to achieve long-term environmental and liveability objectives.

4. **Economic prosperity:** Increasing traffic and constrained capacity on SH1 results in worsening travel time reliability between Tinwald and Ashburton. This impacts freight connections and economic prosperity.

The wording of these problem statements may be revised following wider stakeholder feedback.

### 3.3.2 Weighting the issues

Stakeholders agreed that based on knowledge of existing issues, that social/economy was the highest priority problem to address. The agreed weightings in the workshop were 'social and economy' - 50%, 'travel choice' – 30% and 'safety' – 20%.

However, as above, post workshop it was deemed appropriate to separate out 'social connectivity' and 'economy'. The final problem weightings are:

- Social connectivity – 40%
- Safety – 20%
- Travel choice – 30%
- Economic prosperity – 10%



## 4. Problem 1: Social connectivity

*“An absence of route choice contributes to more traffic on SH1. This discourages people from making journeys they otherwise would, creating social disconnect and lack of a ‘one community’ feeling”*

### 4.1 Causes

#### 4.1.1 Lack of route choice

There is only one road bridge across the Hakatere River within the Ashburton urban area.

If the bridge was closed for any reason (e.g. crash, breakdown, maintenance, flooding, or earthquake) then the nearest alternative road bridge across the river is located on the Mayfield Valetta Road. This involves a detour of about 60 km. Regarding this detour route:

- It uses part of SH77, with the rest on rural roads.
- No temporary speed limits are required on the route but there is a weight restriction listed as "<50Max".
- There are sections that have seal widths of less than 6.5m which will increase potential for crashes with high volumes using the road.

The lack of practical, alternate route choices for travel between Ashburton and Tinwald means that a high proportion of vehicle movements on the bridge are associated with local travel.

Number plate surveys were undertaken in 2006 and 2012 to determine what proportion of the movements on the bridge were regional vs local. The results indicated that less than 30% of all movements were regional. While this appears to be a very low proportion, it does reflect the traffic volumes recorded by Waka Kotahi along SH1<sup>13</sup>.

#### Impact to network resilience

Waka Kotahi's state highway resilience maps indicate that the SH1 bridge has a moderate risk of disruption in the event of a large earthquake (1 in 1,000-year event), during which time it could be closed for up to two weeks. Following this type of event, the bridge is unlikely to be operating at its usual capacity. The bridge also has a 'medium' risk of damage in a 1 in 100-year storm event. This could result in movements on the bridge being restricted or the bridge being closed for one day.

#### 4.1.2 Increasing regional traffic volumes

Figure 4-1 shows the Annual Average Daily Traffic volumes (AADT) recorded at four locations on SH1 from north of Ashburton to south of Tinwald.

For each site, traffic volumes have risen steadily since 2008. The highest volume of movements occurs in central Ashburton with the lowest volumes occurring south of Tinwald. North of Ashburton, there has been a more rapid increase in traffic volumes which is likely due to the development of the Ashburton Business Park. The growth rates in the AADT have varied from 1.1% to 3.0%.

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<sup>13</sup> Traffic volumes recorded immediately to the south of the bridge at site 01S00431 will comprise both regional and local traffic. The volumes recorded at the count sites to the north (01S00428) and south of Ashburton (01S00440) will be predominantly regional traffic movements but will include movements to or from Ashburton. The traffic volume recorded to the south of Ashburton represents about 30% of the volume recorded at the bridge and represents an upper limit to the volume of regional traffic in Ashburton. This is consistent with the number plate survey results which suggested that regional traffic movements at the bridge accounted for < 30% of all movements.

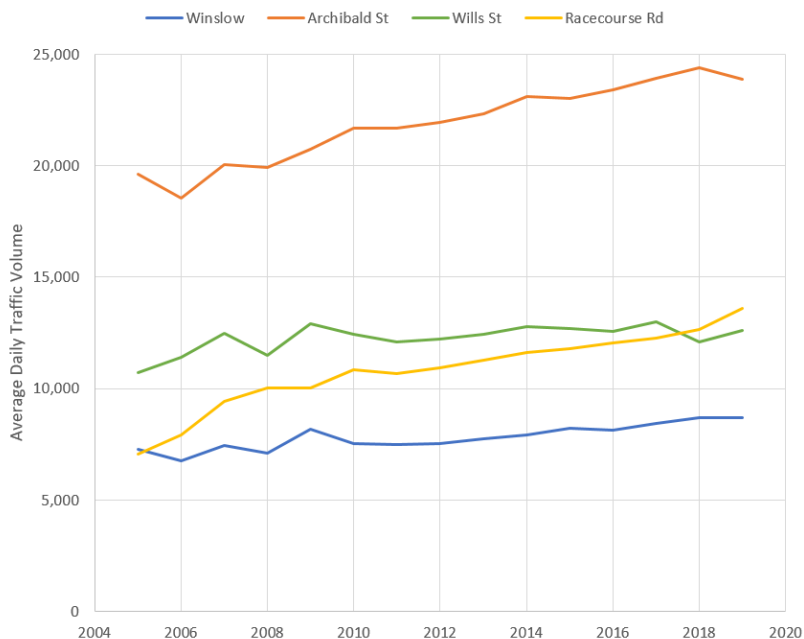


Figure 4-1: SH1 AADTs<sup>14</sup>

#### 4.1.3 Limited capacity of SH1

Previous studies (refer to Section 1.4) raised concerns about the ability of the existing bridge to accommodate future volumes of traffic. The Ashburton Transport Study stated:

*“With the additional traffic generated by proposed development, there is as expected, a resulting deterioration of the operation of Ashburton’s road network. By 2026, if the road network remains unchanged, it can be expected that there will be considerable queuing and delay centred about the SH1/Moore Street and SH1/East Street intersections. In addition to these intersections, there are several other key intersections expected to be operating above capacity by 2026 in the evening peak. These are:*

- SH1/Havelock Street
- East Street/Havelock Street
- SH1/East Street South
- SH1/Walnut Avenue
- SH1/Graham Street”

There is only a finite amount of capacity available on SH1. The *Austroads Guide to Traffic Management Part 7* suggests that the current configuration of the bridge has a theoretical capacity of about 1,200-1,300 vehicles per hour per lane.

A review of historical counts has shown that one-way hourly traffic volumes of over 1,200 vph are exceeded on most days in the southbound direction. This means that during these periods any changes in volumes can cause large increases in delay.

<sup>14</sup> Waka Kotahi TMS database

#### 4.1.4 Key community facilities focused on the northern side of the river

Figure 4-2 shows the distribution of key community facilities including schools, early childhood centres, health care, shopping areas, recreation, and places of worship.



**Figure 4-2: Location of key community facilities**

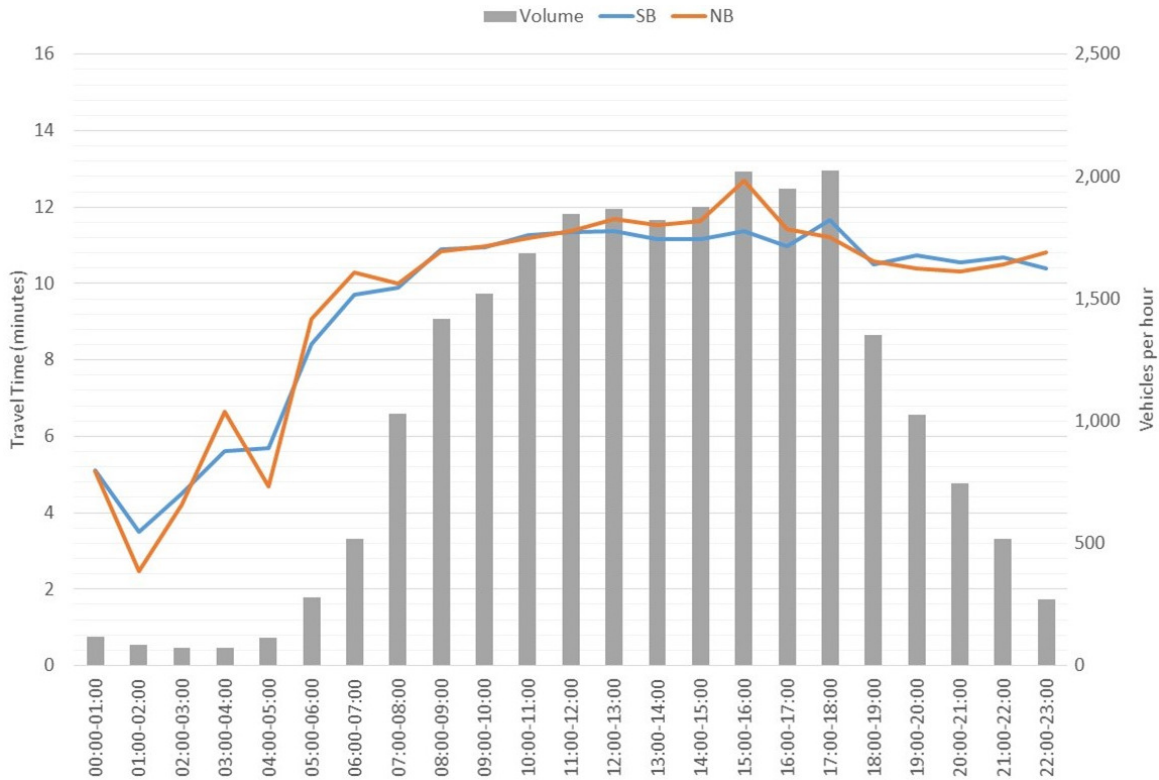
The map highlights:

- Most of the community facilities are on the northern side of town
- The Tinwald Medical Centre is the only health facility south of the river.
- Community facilities such as churches, schools and the library are located on the northern side of the river. This was also noted in the Social Impact Assessment.
- Lake Hood is the only major recreational area south of the river. Its popularity means that it attracts residents who live in the north of town, as well as others from across the wider region.
- Only Tinwald School is located south of the river. There is a similar distribution for Early Learning Centres with the majority located in Ashburton and only two located in Tinwald.
- Since Tinwald School only caters for Years 1-6, older students living south of the river must cross the river to continue their education. Although some students can use the school buses, many are transported by private vehicle.

## 4.2 Consequences

### 4.2.1 Longer journey times

To better understand travel time and journey reliability between Tinwald and Ashburton, analysis of TomTom data was undertaken. Figure 4-3 shows the average travel times on SH1 in the northbound and southbound direction (October 2019)<sup>15</sup>.



**Figure 4-3: Travel times along SH1 (October 2019)**

The data identifies that it typically takes ten minutes to travel along SH1 from the Racecourse Road intersection north of Ashburton to the Maronan Road intersection south of Tinwald (distance of 9km).

However, travel times of twelve minutes or more can be expected during the busiest times of the day when the hourly two-way volumes across the bridge exceed about 1,800 vehicles per hour (vph). The uncertainty in travel times affects discretionary travel, as some people will choose to avoid times with high delays or congestion where possible.

Peak spreading is not necessarily a problem if it helps to optimise the network. But it does become a problem if people do not make journeys they otherwise would like to (for example see friends or take part in community activities) just because they don't want to experience peak time travel.

### 4.2.2 More unreliable journey times

The TomTom data has also been used to create a simple model to better understand the correlation between travel times and traffic volumes.

Figure 4-4 provides a graph which plots travel time (y-axis) vs traffic volumes (x-axis) for the southbound and northbound directions respectively. The spread of the individual points on the graph essentially reflects the level of travel time reliability (the more spread out, the less reliable).

The graphs show that:

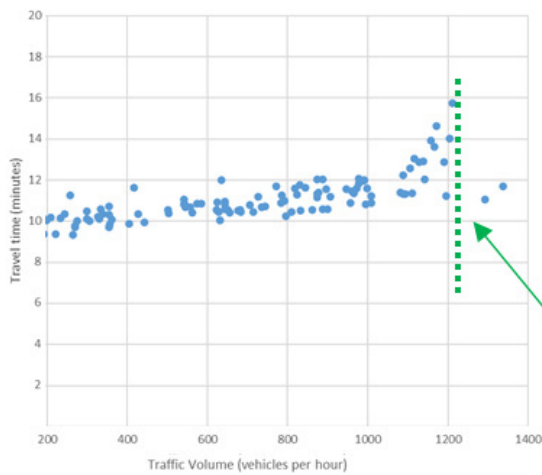
- When the total volume of traffic is below 900 vph per lane, travel times increase only marginally as traffic increase. Beyond 900 vph per lane, the effects of congestion start to generate larger incremental increases in travel time.

<sup>15</sup> Based on TomTom data

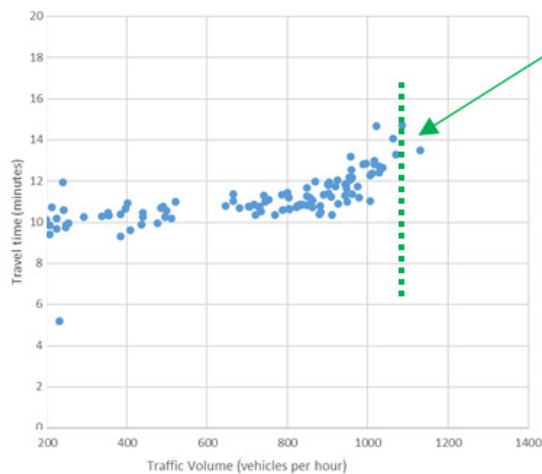


- Once there are around 900 - 1,100 vph per lane (in either direction) using the bridge, travel times begin to increase at a faster rate than the increases in traffic. Essentially this is the tipping point at which point journey times become longer and more unreliable.

#### Southbound



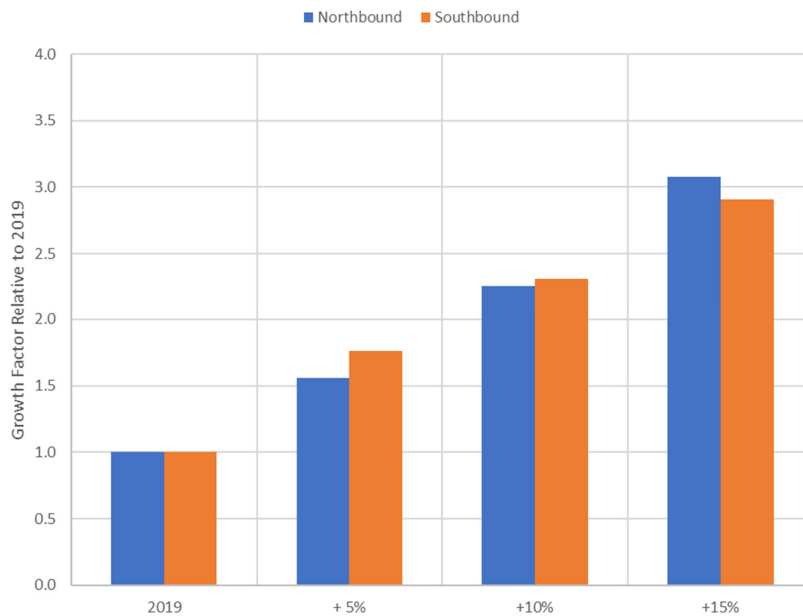
#### Northbound



Small increases in volume contribute to greater congestion on SH1

**Figure 4-4: Travel times vs volumes**

Figure 4-5 shows the forecast growth factor for the number of hours of congestion if traffic volumes increased by 5%, 10% or 15% compared with 2019 volumes.



**Figure 4-5: Growth in Congestion as a function of Traffic Volume Growth**

A 5% increase in traffic is expected to increase the number of hours of congested travel movement by over 50%. With 10% growth, the amount of time drivers would experience congested conditions will more than double compared with 2019 conditions. If the regional traffic growth rates recorded prior to 2020 had continued, traffic volumes of 5-10% higher than 2019 volumes would be expected on a regular basis before 2026.

This analysis shows how sensitive the network is to changes in demands and highlights how the corridor is currently functioning just within its available capacity for vehicles.

#### 4.2.3 Severance creating a lack of social connection

Social (or community) severance can be created when a road acts as, or feels like, a barrier to movement. This tends to be because people feel unsafe crossing the road (which could be on foot, on bike or even in a car) which means people tend not to make a trip they would otherwise want to. Effects such as noise and air pollution created from traffic can also create a psychological barrier.

Severance is more marked when:

- Traffic volumes are high, and flow is continuous.
- Speeds are higher.
- There are a high proportion of heavy vehicles.
- Facilities for crossing the road using any mode delivers a poor level of service either due to long wait times or lack of protection when crossing.

The connection between the volume of traffic and community cohesion is wider recognised, with the impacts of high volumes of traffic found to reduce community liveability and wellbeing (Appleyard, 1980)<sup>16</sup>. With increasing car dependency, the wider reaching consequences are that local streets increasingly become dominated and prioritised for vehicle movement, rather than spaces that previously provided a space for social interaction.

The combined effect of community facilities mostly on the northern side of the river plus high traffic volumes on SH1 ends up reducing freedom of travel and adversely affects connectivity between the communities.

<sup>16</sup> Appleyard, D (1980). 'Liveable streets: Protected neighbourhoods?' Annals of the American Academy of Political and Social Science, 451 (1), 106-117.

## 5. Problem 2: Travel choice

*“Limited (or poor quality) facilities for sustainable modes makes it difficult to achieve long-term environmental and liveability objectives”*

### 5.1 Causes

#### 5.1.1 Poor quality active travel facilities across the river

The existing bridge (approximately 350m long) incorporates a combined pedestrian and cycle path on the eastern side of the bridge, and a cycle path on the western side. The effective width of the shared path is less than one metre wide which is far below the minimum recommended width for a shared path of 2.5m. This makes it nearly impossible to pass other users, and people report feeling very uncomfortable on the bridge paths. This could be either because of large vehicles passing close by, or people feel more vulnerable to potential crime (a lack of an escape route)<sup>17</sup>.

Figure 5-1 provides site visit photos which highlight the poor quality of the shared path – i.e. being narrow, uneven, poorly maintained and generally unattractive.



**Figure 5-1: Poor quality of existing footpath on the SH1 bridge**

The poor walking and cycling facilities on the SH1 bridge represent barriers which discourage walking and cycling between Tinwald and Ashburton.

#### 5.1.2 Limited active mode provisions on local roads

Across the local road network there is limited provision for active mode users. South of the bridge, cycling facilities on SH1 are limited to marked on-road lanes, which are generally not suitable for children and less confident cyclists.

ADCs walking and cycling strategy (currently in development) is being used as a mechanism to better understand where investment in active modes should be targeted, and what the investment should be. In general terms, a lack of physical separation between cyclists and traffic means that currently the road network is only used by experienced and confident cyclists.

Assuming a typical vehicle speed of 45 kph, and one-way traffic volumes at around 1,200 vph during peaks, in accordance with the Austroads Level of Service framework<sup>18</sup>, the resultant safety LOS for cyclists is LOS C. This is described as ‘an exclusive bicycle facility in a medium to high risk road environment’<sup>19 20</sup>.

<sup>17</sup> Abley, *DRAFT Ashburton District Walking and Cycling Strategy* (2020), pg. 13

<sup>18</sup> Austroads Research Report AP-R475-15

<sup>19</sup> A LoS C is also described as where no cycle facility is available in a low to medium risk road environment. The section described here has been the on road marked cycle facilities on State Highway 1 in Tinwald.

<sup>20</sup> Jensen, SU 2007, ‘Pedestrian and bicyclist level of service on roadway segments’, *Transportation Research Record*, no. 2031, pp. 43-51. retrieved from Austroads Research Report AP-R475-15

### 5.1.3 Lack of public transport services

There are no public transport services in Ashburton or Tinwald aside from the school bus services. There are also no on-demand services (such as Uber). The only bus services are for schools.

This lack of public transport further limits travel choice for residents.

### 5.1.4 Poor access to recreational routes

The Ashburton Hakatere Trail starts at the Ashburton Bridge and follows the true left bank of the river to the river mouth at Hakatere (approx. 18km east of the bridge). The Lake Hood trail starts on the south side of the bridge and follows the south side of the river before turning towards Lake Hood. There is also network of recreational bike tracks running alongside the Hakatere River.

Figure 5-2 shows the Ashburton walking and cycle trail map.



Figure 5-2: Ashburton trail map

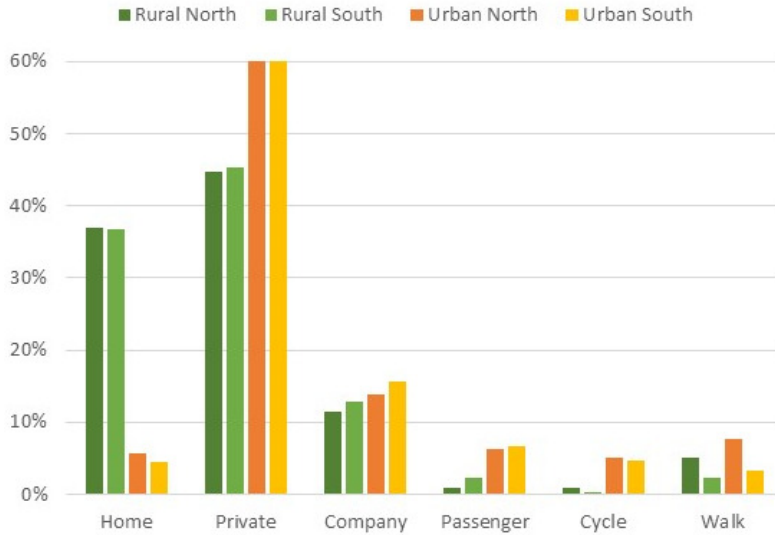
There is however poor or limited access to these recreational routes as the existing cycle network is limited and lacks connectivity making it challenging to ride to these trails.



## 5.2 Consequences

### 5.2.1 Reliance on the car

To obtain a baseline for how many people use active modes for their journeys to work and education, analysis of the census 2018 data was undertaken. Figure 5-3 provides a breakdown of the journey to work data for the travel mode split for rural and urban areas recorded in the 2018 census.

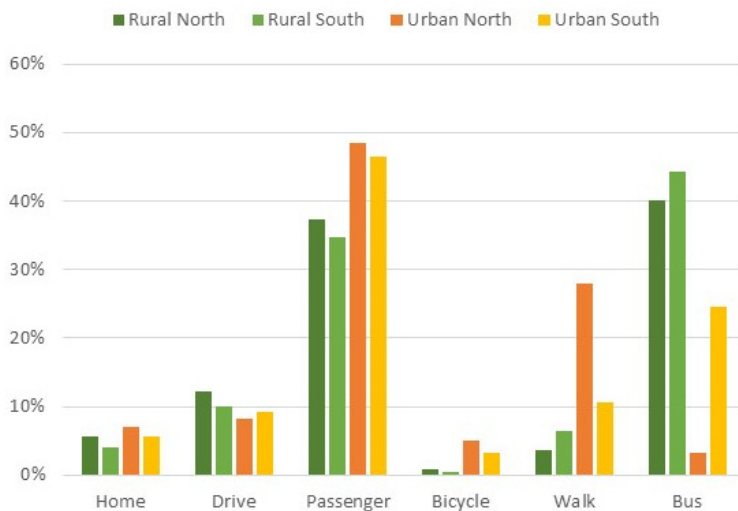


**Figure 5-3: Workplace travel mode share**

The census data shows:

- Travel by a private or company vehicle was the most common mode of travel in both rural and urban area, about 50% and 70% respectively. The difference reflects the greater proportion of people working from home in rural areas.
- Walking and cycling accounted for less than 5% of all modes in rural areas compared with 12% in Ashburton and 7% in Tinwald. Nationally, around 8% of people walked or cycled to work<sup>21</sup>.
- Public transport is not an option for journeys to work.

Figure 5-4 shows the mode share for education travel.



**Figure 5-4: Education travel mode share**

<sup>21</sup> Excluding those who worked at home, and did not work – 2.2% cycle, 5.9% walk.

The census data shows:

- Travel as a passenger accounts for the greatest mode share for urban areas.
- In rural areas, the availability of school buses means that this represents the highest mode share but there is still a very high proportion of students travelling as passengers.
- Active travel modes account for 30% of all education-based trips in Ashburton but less than 15% in Tinwald. This reflects the fact that most schools are located north of the river.

A key consequence of limited and poor-quality active mode provisions is that it becomes ever more difficult to change attitudes to using active modes.

This is particularly true in the younger generation. Without providing high quality active mode provisions now (with safe crossing points), there is a risk that a car-centric mindset (even for short journeys) is set. This then makes it difficult to achieve local and national goals for increased active mode share, health, and reduced carbon emissions. Parents will only let their children ride to school if they have peace of mind that the entire journey from home to school is safe.

### **5.2.2 Limiting the potential of recreational trails**

The only cross-river facility is the poor quality shared path (which is not practical for many cyclists), which means that recreational riders will tend to ride only along one side of the river. As such, the full potential of the trails is not being realised. Effectively there are two separate and disconnected trails (the Hakatere River and Lake Hood trails).

## 6. Problem 3: Safety

*“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”*

### 6.1 Causes

#### 6.1.1 High volume of vehicles and trucks

A high volume of trucks on SH1 also contributes to the actual and perceived safety problem. Trucks need longer to brake, other road users often misjudge their speed, and they need longer gaps in the traffic if they are to safely enter the state highway.

Refer to Figure 1-3 and Figure 1-6 for evidence around current traffic and freight demands.

#### 6.1.2 Oversized trucks and agricultural machinery using the state highway

Stakeholders have confirmed that oversize trucks typically associated with the transport of agricultural machinery sometimes travel along SH1 during peak times. These are generally slow moving and on occasions require a pilot vehicle.

The slow movement of these vehicles contributes to congestion when high traffic volumes are present and generates frustration for following vehicles which in turn increases the temptation for unsafe overtaking manoeuvres.

The relatively high volumes of traffic during the day makes it difficult for oversize vehicles and any necessary pilot vehicles to access the highway.

#### 6.1.3 Lack of controlled safe access points onto the state highway

The safety issues associated with gaining access onto the state highway are well recognised by both ADC and Waka Kotahi. This is one of the key drivers for progressing with the Tinwald SSBC, and for detailed evidence, this reference can be made to the Tinwald Corridor PBC.

Notwithstanding, in general terms there are eight priority-controlled T-intersections and two being priority controlled cross intersections in the urban area of Tinwald. To understand the kinds of risk that are being presented, reference has been made to Waka Kotahi’s High-Risk Intersection guide<sup>22</sup>.

This provides an overview of the typical composition of death and serious injury (DSI) crashes by intersection form in urban speed environments (see Figure 6-1). Given the high traffic volume on SH1 and the presence of crossing and turning movements there will be an ongoing (and likely growing) safety risk associated with ‘crossing turning’ movements.

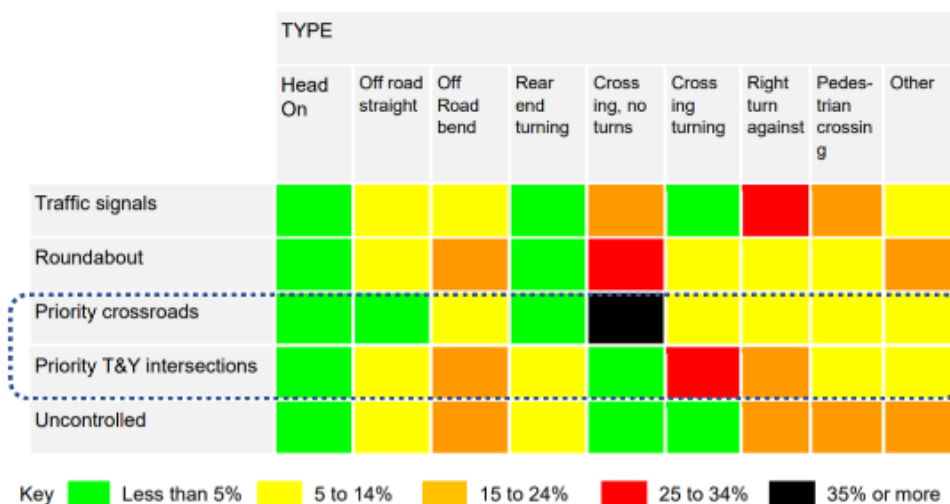


Figure 6-1: Composition of DSI crashes by intersection form in urban speed environments<sup>23</sup>

<sup>22</sup> <https://www.nzta.govt.nz/resources/high-risk-intersections-guide/>

<sup>23</sup> [www.nzta.govt.nz/assets/resources/high-risk-intersections-guide/docs/high-risk-intersections-guide.pdf](https://www.nzta.govt.nz/assets/resources/high-risk-intersections-guide/docs/high-risk-intersections-guide.pdf) (with Tinwald SH1 intersection forms circled).

The effects of the increasingly difficult gap selection are two-fold, both of which are likely to be compounded by any future traffic growth:

- Increasing delays and variability. These are discussed in Section 4.2.2.
- Increased crash risk. Resulting from drivers accepting unsafe gaps in opposing traffic streams because of driver frustration.

The gap selection process is presented in Figure 6-2.

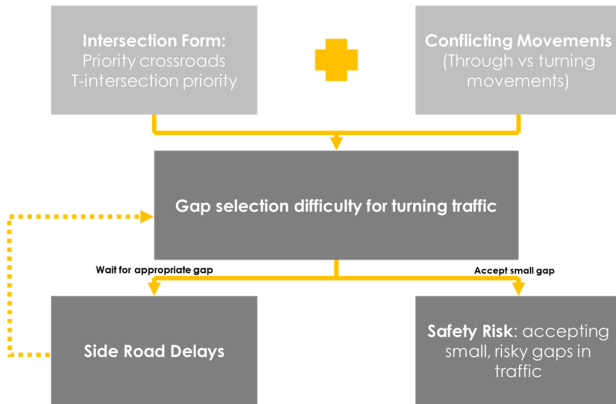


Figure 6-2: Gap selection flow chart

## 6.2 Consequences

### 6.2.1 Increased likeliness of crashes and DSIs

Figure 6-3 shows the collective risk ratings for all roads within the project area<sup>24</sup>. It shows that the collective risk for the majority of SH1 is Medium. The primary reason for this is because traffic is being concentrated onto one route.

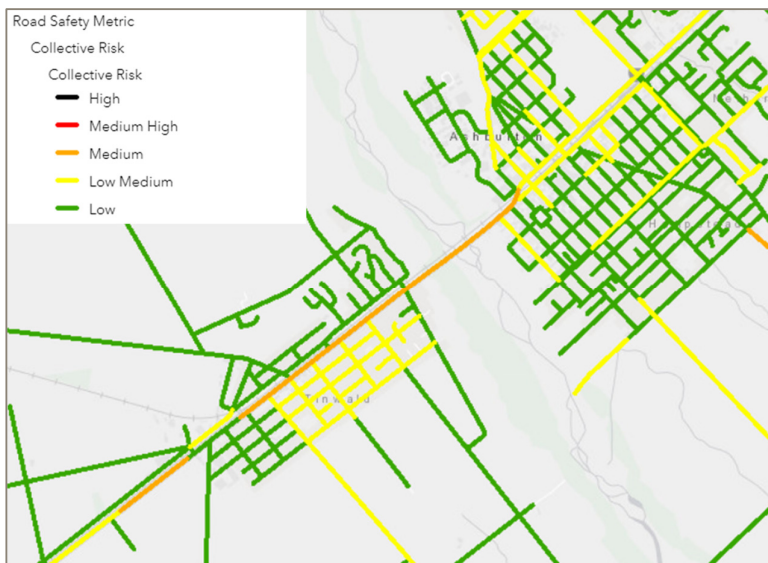


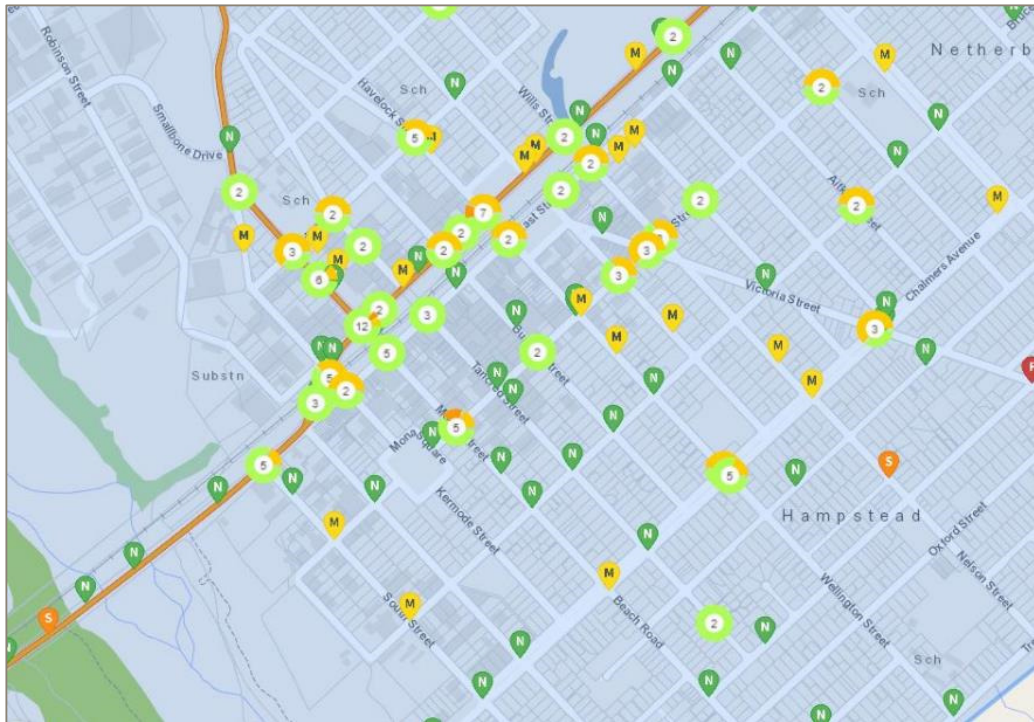
Figure 6-3: Collective risk<sup>25</sup>

Figure 6-4 shows the locations, number, and severity of reported crashes in central Ashburton. It shows that crashes typically occur at intersections and that these are generally clustered along the state highway corridor. Most crashes result in no injury or minor injuries only.

<sup>24</sup> Risk density measured as the number of fatal and serious casualties over a distance – e.g. DSIs per kilometre or within a set distance of an intersection

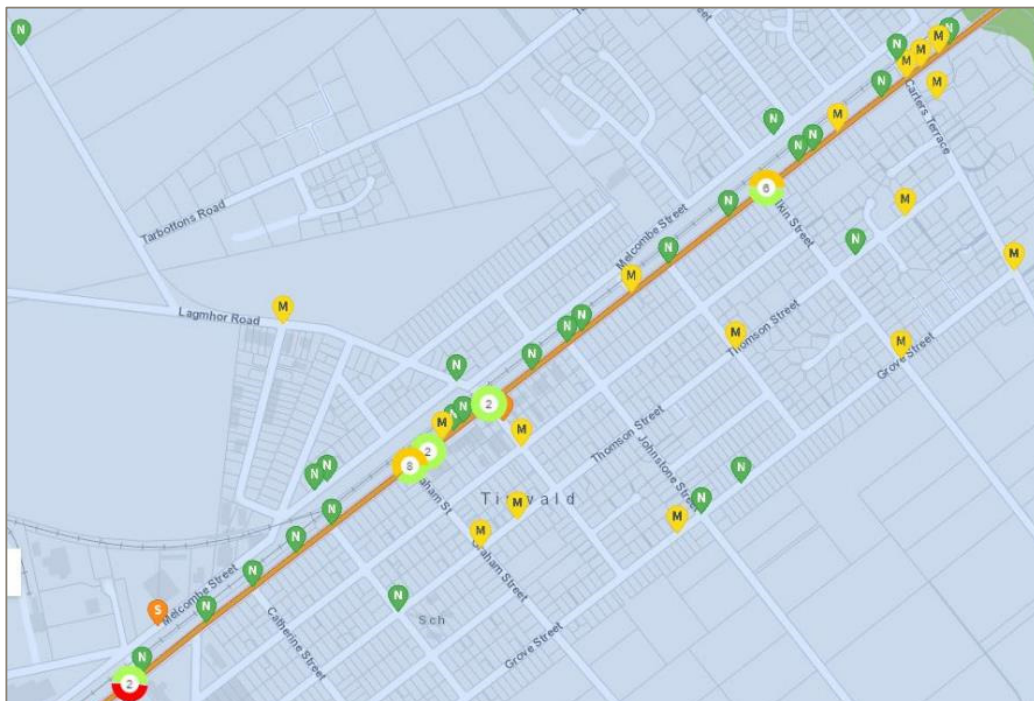
<sup>25</sup> megamaps.abley.com/Maps/





**Figure 6-4: Ashburton crash locations and severity (2015-19)**

Figure 6-5 shows the locations of reported crashes in the Tinwald area. This shows clusters of crashes at the SH1 / Grahams Street, SH1 / Lagmhor Road and SH1 / Wilkin Street intersections. Crashes have also been reported all along SH1 through Tinwald. One crash resulted in a fatality when a motorcyclist hit a truck that was turning from a side road. This occurred at the southern end of Tinwald.



**Figure 6-5: Tinwald crash locations and severity (2015-19)**

Seven of the reported crashes involved rear-end collisions in queued traffic with five crashes involving manoeuvres. Three crashes occurred at intersections. The only serious injury crash on this section of the road involved a single vehicle only and occurred when the driver left the road.

There was one fatality in the preceding five-year period (2010-2014) when a mobility and vision impaired man was hit by a motor vehicle at the pedestrian crossing north of the Graham Street intersection. Failure to give way was identified as the cause of the crash but the vision impairment of the pedestrian may have also contributed to the misjudgement of the vehicle speed with age being a factor in the crash severity.

### **6.2.2 Unsafe environment for vulnerable users**

A LOS C rating for on-road cycle facilities mean that any people who choose (perhaps out of necessity) to cycle, are cycling in a 'medium to high risk road environment'. Others are put off cycling altogether. Real and perceived safety also has a large bearing on how a place feels, whether people want to visit and spend time.

As referenced previously, use of the bridge for pedestrians also brings significant CPTED<sup>26</sup> concerns, with people more vulnerable to crime because of a lack of an escape route.

### **6.2.3 Emergency services are vulnerable to delay**

Arriving promptly at emergencies can often be crucial to the outcome of an event. However, emergency services are highly vulnerable to delay because:

- Emergency services are all located on the north side of the river.
- Potential congestion on the only connection (the bridge) between Tinwald and Ashburton.
- A lack of alternative routes
- A constrained cross-section on the bridge which means that people have no place to pull over to allow emergency services to pass.

### **6.2.4 Other**

Other key consequences of the 'safety' problem are:

- Difficulty entering the state highway for heavy vehicles ('economic problem' – section 7).
- Difficult to cross the state highway (severance / social connectivity problem – section 4).

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<sup>26</sup> Crime prevention through Environmental Design

## 7. Problem 4: Economic prosperity

*“Increasing traffic and constrained capacity on SH1 results in worsening travel time reliability between Tinwald and Ashburton. This impacts freight connections and economic prosperity.”*

### 7.1 Causes

#### 7.1.1 Employment focused on the northern side of the river

More people are working in Ashburton town centre than ever before. Table 7-1 provides a comparison between households and jobs in Ashburton and Tinwald based on the 2018 census.

**Table 7-1: Census - employment data**

Area	Households	Jobs
Ashburton	6,700	7,300
Tinwald	1,500	800
<b>Total</b>	<b>8,200</b>	<b>8,100</b>

The table shows that about 80% of dwellings and 90% of jobs are in Ashburton. This generates some form of tidal demand from Tinwald for workplace trips, where people head into Ashburton in the morning, and return south in the afternoon.

Economically it is important that people can access jobs easily and are not deterred from working in either Ashburton or Tinwald because of travel time issues.

### 7.2 Consequences

#### 7.2.1 Reduction in economic productivity

Without increases to capacity or a reduction in demand (potentially obtained through modal shift), delays will increase which could impact upon economic productivity and limit the potential to which Ashburton can grow. Whilst the scale of the issues could be considered as moderate, the previous evidence has shown that the state highway is at a tipping point whereby a small increase in traffic would exponentially increase the level of delays for freight.

The spoilable nature of the produce means that the use of rail freight is often not a viable alternative, which means industries are reliant on road freight. There is also a risk that any significant delays being encountered could impact upon the ability for freight operators to make connections (e.g. with the port or airport).

#### 7.2.2 Impact to land values in Tinwald

Stakeholders noted that the cumulative effects of worsening traffic congestion and increased severance could lead to a situation where people see it as more desirable to live in Ashburton than Tinwald. In the future this could affect the value of land in Tinwald.

Any future improved cross-river connections would also have an impact on land values. The Social Impact Assessment provided a brief discussion in this respect, noting that any new road which provides good levels of accessibility to Ashburton is likely to attract residential buyers.

#### 7.2.3 Economic impact of poor network resilience

If the bridge was closed for any reason, using the nearest alternative road bridge involves a detour of about 60km. The travel time to complete the detour is expected to be at least 50 minutes based on average speed of 70km/h on the detour route. This represents a minimum average cost per vehicle of \$50 for the detour (\$19 for vehicle operating cost and \$31 for travel time costs).

If the bridge were closed for one day and there was no change in the travel demand, the total additional travel time cost of the detour would be about \$1.1m.

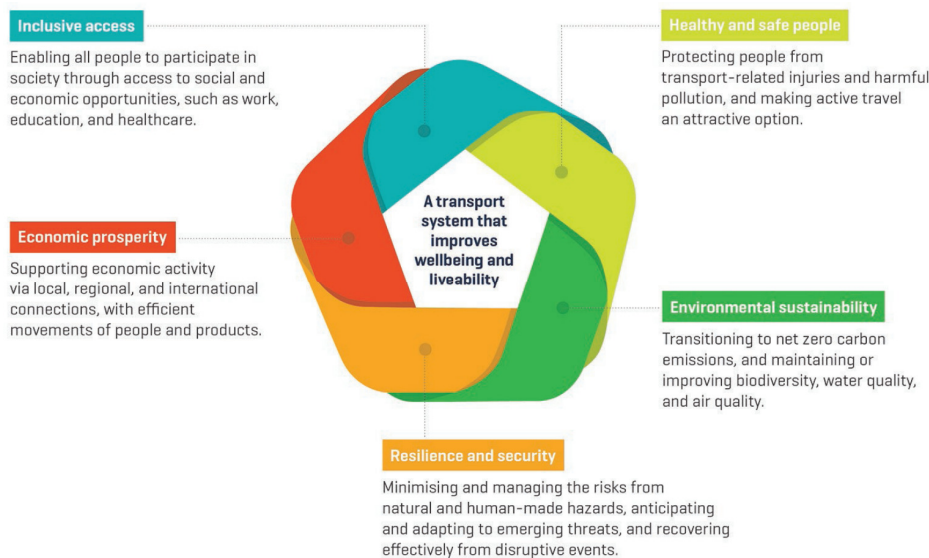
## 8. Benefits of Investment

### 8.1 Benefits of investment

#### 8.1.1 Investment Decision Making Framework

This business case has referred to the Benefits Framework outlined in Waka Kotahi's recently published Investment Decision Making Framework (IDMF). This new benefits framework is aligned with the *NZ Enduring Outcomes* in the Ministry of Transport's Transport Outcomes Framework (TOF)<sup>27</sup>.

These outcomes are shown as Figure 8-1.



**Figure 8-1: NZ Enduring Outcomes**

The problem statements align strongly with all the enduring outcomes.

The new IDMF benefit framework was then applied to help determine the range of potential monetised and non-monetised benefits of solving each of the problems. These are outlined within Table 8-1 along with an overview of which of the NZ enduring outcomes are captured by which problem statement.

<sup>27</sup> [www.nzta.govt.nz/assets/planning-and-investment/docs/benefits-framework-june-2020.pdf](http://www.nzta.govt.nz/assets/planning-and-investment/docs/benefits-framework-june-2020.pdf)



**Table 8-1: Benefits of investment**

Problem Statement	Inclusive access	Economic prosperity	Healthy & safe people	Resilience & security	Environmental sustainability	Benefits	
						Monetised	Non-Monetised
<b>Social connectivity</b> An absence of route choice contributes to more traffic on SH1. This discourages people from making journeys they otherwise would, creating social disconnect and lack of a 'one community' feeling.	✓			✓		-	<ul style="list-style-type: none"> <li>Improved mental health</li> <li>Availability of viable alternative routes between Tinwald and Ashburton</li> <li>Improved feeling of social connectiveness</li> <li>Better access to key facilities such as health care</li> </ul>
<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.			✓			<ul style="list-style-type: none"> <li>Lower likeliness of DSIs and number of crashes</li> </ul>	<ul style="list-style-type: none"> <li>Improved infrastructure risk rating</li> <li>Improved safety perceptions - via surveys</li> <li>Improved personal and collective risks</li> </ul>
<b>Travel choice</b> Limited (or poor quality) facilities for sustainable modes makes it difficult to achieve long-term environmental and liveability objectives.			✓		✓	<ul style="list-style-type: none"> <li>Physical walking and health benefits</li> </ul>	<ul style="list-style-type: none"> <li>Improved air quality</li> <li>Reduced road noise</li> <li>More enjoyable walking and cycling journeys</li> <li>Meeting mode share goals of ADC</li> </ul>
<b>Economy</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.				✓		<ul style="list-style-type: none"> <li>Improved journey times for locals</li> <li>Improved journey time reliability for freight</li> <li>Land values in Tinwald</li> </ul>	-

## 8.2 Investment Logic Map

The Investment Logic Map, including the KPIs which are based around measuring the benefits identified in Table 8-1, is provided Figure 8-2.

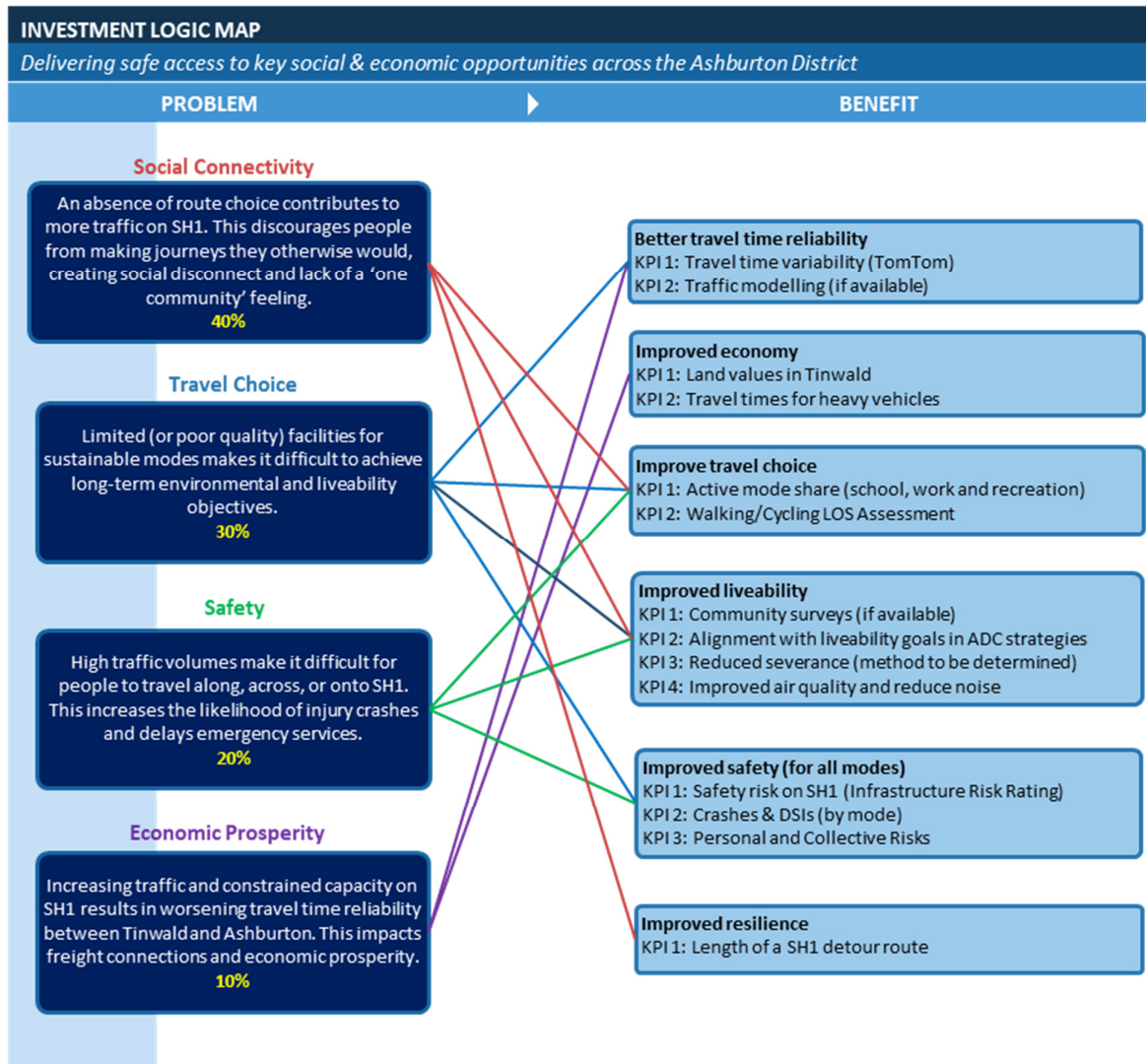


Figure 8-2: Investment Logic Map

## 9. Strategic context

Table 9-1 sets out how the case of change aligns with relevant national, regional, and local strategies.

**Table 9-1: Strategic alignment**

Organisation	Document	Alignment
Central Government (National)	Road to Zero: New Zealand's road safety strategy 2020-2030	Alignment with Focus Area 1, where there is a case for investment in safety treatments and infrastructure improvements.
Waka Kotahi (National)	Draft Government Policy Statement for Land Transport (2021)	<p><b>Safety:</b> Alignment with this strategic priority by providing safer facilities for those who chose to walk or cycle.</p> <p><b>Better travel options:</b> Strong alignment should the business case deliver new travel choices that provide people with better access to education, health care and to generally participate in society. This is particularly relevant for active modes as the current SH1 bridge offers very poor level of service.</p> <p><b>Climate change:</b> Alignment with this strategic priority as a focus of the business case is around travel choice and encouraging the use of active modes. Doing so will reduce emissions.</p> <p><b>Improving freight connections:</b> Very strong alignment as another key focus of the business case is around ensuring reliable journey times for freight movements along SH1.</p>
	Arataki: 10 year transport plan	<p>Strong alignment with the focuses of improving urban form, supporting regional development and safety.</p> <p>This business case recognises that despite the current pandemic, no significant changes are expected in the nature, scale, and location of transport demand over the medium to long term. The 10 year outlook for Canterbury remains largely unchanged.</p>
	Keeping Cities Moving (2019)	The focus of this strategy is around increasing the wellbeing of New Zealand's cities (and towns) by growing the share of travel by public transport, walking and cycling. This aligns strongly with the investment story for this business case.
Environment Canterbury (Regional)	Canterbury Regional Land Transport Plan 2015-25	The Canterbury Regional Land Transport Plan (RLTP), which was revised in June 2018, includes a second urban bridge as a Priority 3 project with high regional priority and medium urgency. The RLTP includes a provisional cost for a second urban bridge of \$30M. A second river crossing is one potential solution that will be explored further as part of this business case.
Ashburton District Council (Local)	Long Term Plan 2018-28	A second urban bridge is one of five major projects included in the Long-Term Plan.
	Transportation Activity Management Plan 2018-21	Congestion caused by the SH1 bridge is identified as a key issue. An alternative river crossing was identified as an option.
	District Plan (2014)	Very strong alignment. In May 2014, a designation was put in place in the District Plan for the proposed route. The designation connects the southern end of Chalmers Avenue with a new bridge across the Hakatere River and onto a new two-lane road through low density land east of Tinwald to connect with Grahams Road at the south end of Tinwald.
	Sport and Recreation Strategy 2010	One objective of the strategy is ensuring people are actively involved in sport and recreation throughout their lives. A key objective supporting this goal is providing a better walking and cycling network in Ashburton which aligns strongly with the aspirations of this business case.
	Draft Walking and Cycling Strategy (2020)	<p>Strong alignment. The vision of this strategy is “<i>more people, more active, more often</i>” and its supporting objectives are:</p> <ul style="list-style-type: none"> <li>• A coherent, safe, and connected urban walking and cycling environment</li> <li>• A quality, fit for purpose recreational walking and cycling network that connects key destinations</li> </ul>

Organisation	Document	Alignment
		<ul style="list-style-type: none"> <li>• Ensuring the urban and rural walking and cycling networks integrate to create an accessible district</li> <li>• A District that is committed to walking and cycling for health, well-being, safety, environmental and economic reasons.</li> </ul> <p>This business case seeks to contribute to all these objectives by providing a quality, fit for purpose walking, and cycling connection between Tinwald and Ashburton.</p>

## 10. Case for Change

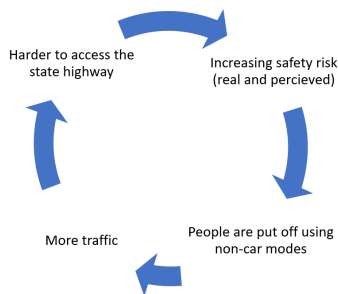
### 10.1 Overview

SH1 is a key strategic transport route for the South Island that links Picton in the north with Bluff in the south via all major towns and cities along the east coast. The town of Ashburton is located on the northern side of the SH1 bridge over the Hakatere River, with Tinwald on the opposite side (southern) side of the river.

Population and regional industrial growth over recent years has resulted to higher traffic volumes on SH1 and increasing level of congestion through Ashburton. Contributing factors are the capacity of the SH1 bridge, lack of practical route choice, and poor quality active and public transport provisions.

But primarily it is the knock-on effects of worsening congestion that are creating the major problems:

- **Social connectivity.** Increased traffic means it is becoming more difficult and unsafe to get onto and across the road. This is creating community severance – both north to south (across the river) and east to west (across SH1). Access to important community facilities, of which most are in Ashburton, is increasingly challenging (particularly during peak times).
- **Travel choice.** People who would like to walk or cycle (notably school children) feel unsafe using roads where priority is given to traffic and on shared paths which are uncomfortable and of poor quality. The car then ends up being used even for short journeys, which is exaggerated by an absence of any public transport services.
- **Safety.** There is a vicious cycle occurring where increasing traffic adversely affects road safety which in turn is encouraging more people to travel by car.



- **Economic prosperity.** Increasing levels of congestion contribute to less reliable travel times which means it takes longer for freight to move across the region. For local employees, it also makes living in Ashburton more appealing than living in Tinwald.



## 10.2 Problems

The strategic case reflects the direction provided by the ILM workshop attendees.

A summary of the problems is provided within Table 10-1

**Table 10-1: Problem summaries**

Problem Statement	Key evidence	Conclusions
<b>Social connectivity (inclusive access).</b> An absence of route choice contributes to more traffic on SH1. This discourages people from making journeys they otherwise would, creating social disconnect and lack of a 'one community' feeling.	<ul style="list-style-type: none"> <li>• Ongoing growth in strategic travel.</li> <li>• Population growth in Ashburton and Tinwald.</li> <li>• Lack of alternative routes for any modes.</li> <li>• High proportion of local trips on SH1 across the river.</li> <li>• Severance created by SH1 in Tinwald.</li> </ul>	<ul style="list-style-type: none"> <li>• SH1 traffic volumes affect movement both across the highway in Tinwald and between Tinwald and Ashburton.</li> </ul>
<b>Travel Choice.</b> Limited (or poor quality) facilities for sustainable modes makes it difficult to achieve long-term environmental and liveability objectives.	<ul style="list-style-type: none"> <li>• Poor quality facilities for active travel across the river.</li> <li>• No public transport services.</li> <li>• Location of education, health, community, and workplaces increases reliance on motor vehicles.</li> </ul>	<ul style="list-style-type: none"> <li>• Motor vehicles are the preferred travel mode.</li> <li>• The walking and cycling networks are not yet attractive enough for people to choose.</li> <li>• Public transport and active mode networks must be developed.</li> </ul>
<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.	<ul style="list-style-type: none"> <li>• Ongoing growth in strategic travel.</li> <li>• Population growth in Ashburton and Tinwald.</li> <li>• Lack of practical route choice</li> <li>• High proportion of local trips on SH1 across the river</li> </ul>	<ul style="list-style-type: none"> <li>• Increased likelihood of crashes as traffic volumes grow.</li> </ul>
<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.	<ul style="list-style-type: none"> <li>• Employment focused in Ashburton</li> <li>• Existing high traffic volumes generate periods of congestion and delay for movement on SH1</li> <li>• Unreliable travel times</li> </ul>	<ul style="list-style-type: none"> <li>• Travel times will become less reliable in the future</li> <li>• Reduces efficiency of freight movements along SH1.</li> </ul>

## 10.3 Conclusion

The review of evidence demonstrates that there is a compelling case for change, and now is the time to set in place a plan to address the problems.

Whilst the issues currently being experienced are focused around peak times, the SH1 bridge is unable to accommodate many more vehicles. A small increase in traffic, which is expected given planned local residential and inter-regional growth, will (without intervention) see existing issues worsen and be experienced for longer periods of the day.

The focus of investment should be around how we can better move people (not just in cars) and goods between Tinwald and Ashburton.

Without intervention, the future growth of Ashburton and Tinwald may be limited, with liveability reduced.

# Appendices



## Appendix A   Workshop minutes

## Investment Logic Mapping Workshop

Ashburton North-South Connectivity Business Case

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Date/Time: 05 August 2020, 1300 - 1515

Place: Ashburton District Council (ADC)

Next Meeting: TBC

Attendees: **Facilitation / Presenting:**  
Matt Soper, Chris Rossiter (Stantec)

**Participants:**  
Cr Stuart Wilson & Cr Diane Rawlinson  
Crissie Drummond, Brian Fauth, Ian Hyde, Neil McCann (ADC)  
Peter Livingstone (Tinwald School)  
Jim Crouchley (NZ Road Transport Association)  
John Skevington (AA)  
Jason Adamson (Mountain Bike Ashburton)  
Rob Hooper (Tinwald Cycle Club/NZ Police)  
Heather Keele (St Johns Ambulance)

**Observers:**  
Andrew Washington, John Keenan (Waka Kotahi)  
Bryan Peters (Stantec)

Apologies: -

Distribution: As above

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**Item:****Project Overview**

- Neil McCann (NM) gave an overview of the project and the desired outcomes from the day.
- The role of people attending the workshop were noted:
  - Matt Soper (MS) as facilitator.
  - NM as project sponsor.
  - Other Stantec attendees' as observers.
  - Everyone else has direct knowledge of problems and issues and are contributors.
- MS noted that the project name was changed to the 'Ashburton North-South Connectivity Project' to better reflect the desired outcomes of the business case.
- MS provided an overview of the business case process and project history.

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**Outcome Statement**

- A draft outcome statement was presented to attendees, which read "Improved multi-modal access to community facilities across Ashburton District".
- Feedback was that the statement should capture "safety" and "social/economic opportunities".
- The revised outcome statement is:
  - Delivering safe access to key social & economic opportunities across Ashburton District.

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**Reviewing the evidence base**

For context, Chris Rossiter (CR) provided an overview of the evidence gathered to date. The purpose was to help inform the "issues" discussion that was to follow.

Information provided by stakeholders which will help with the development of the strategic case:

- There are overlapping school zones in Ashburton.
  - TomTom data could be used to understand the proportion of regional trips passing through Ashburton.
  - Weekend and holiday traffic can also be problematic.
-

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**Item:**

- The Ministry of Education would have information relating to where school children live and which school they go to (noting this information may not be available). The MoE may also have information around early childhood centres in Tinwald and Ashburton.
- Rail freight cannot be easily used to transport agricultural produce (a growing and important regional industry south of the river)
- ACC data may be available to better understand the potential level of unreported accidents which involved pedestrians and cyclists.
- Census data could be used to understand where people are going to and from for work trips.
- Pearsons Coachlines could be contacted to better understand issues they have turning onto SH1.
- Bevan @ Fire and Emergency can be contacted to better understand some issues around response times.

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**Identifying themes**

The following key themes were identified from a review of previous work and the Business Case Point of Entry:

- Congestion
- Social Connectivity
- Safety
- Travel Choice

Following a group discussion, '*economic impact*' was a sub-theme that emerged.

Once the problems had been unpacked, stakeholders collectively agreed that congestion was a consequence of issues relating to the other themes (rather than an issue in its own right).

The final themes were therefore:

- Social Connectivity
- Economy
- Safety
- Travel Choice

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**Collating the issues**

An interactive whiteboard session was undertaken to establish key issues. For ease they have been grouped into themes (noting that some issues would fit across multiple themes):

- Safety:
    - High volume of traffic on SH1 during peak periods
    - High volume of heavy vehicles (trucks, tractors, and agricultural equipment)
    - High inter-regional traffic
    - High weekend and holiday peak demands
    - Slow moving trucks (and pilot vehicles)
    - Oversize loads travelling in peak times
    - Proximity of train tracks / crossing barriers
    - Northern approach lane geometry
  - Social Connectivity
    - Land use - education and workplace activities not local to either Tinwald / Ashburton
    - Key amenities on the northern side of Ashburton River
    - Early childhood centres near places of work, rather than residence
  - Economy
    - Agricultural and residential development growth
    - Land use development south of the river (Lake Hood, West Tinwald)
    - Growing number of retirees and retirement villages and active retirees
    - Lack of route choice
  - Travel Choice
    - Active mode provisions are limited or of poor quality on local roads
    - Narrow width of the SH1 bridge
    - Lack of physical separation between traffic and cyclists
-



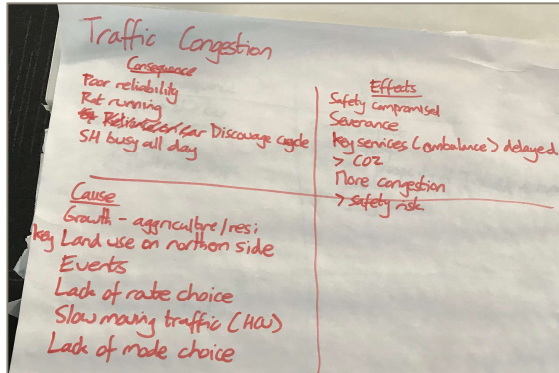
# Item:

- o Poor surface on bridge shared paths
- o Narrow footpath on existing SH1 bridge
- o No public bus or on-demand transport (e.g. Uber)
- o Poor lighting on SH1

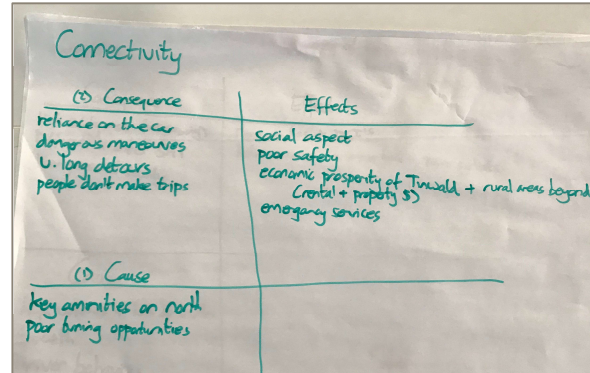
## Unpacking the Problems

Each of the issues were 'unpacked' to identify root causes. These root causes can then help understand potential opportunities to solve the problems.

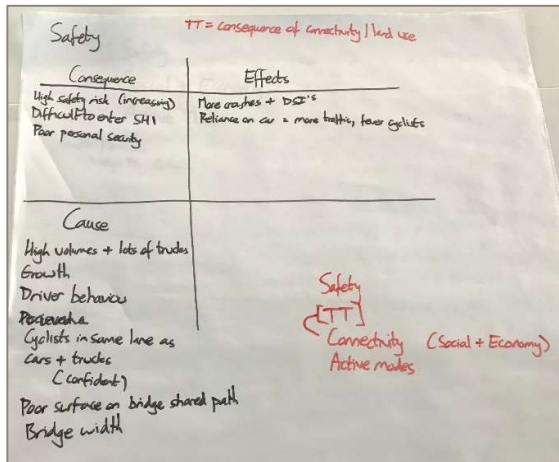
### Theme 1: Congestion



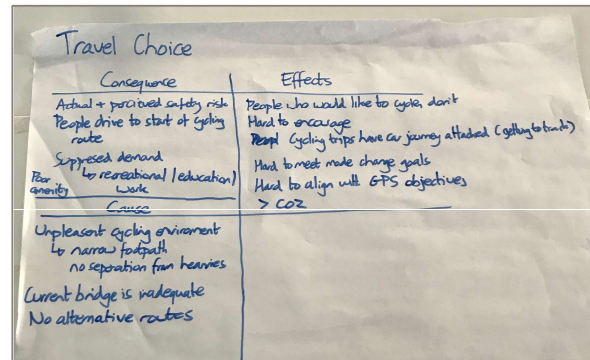
### Theme 2: Connectivity



### Theme 3: Safety



### Theme 4: Travel Choice



Following the workshop, the causes, effects, and consequences of each problem theme were reorganised into the following table, colour coded by theme (black = safety, purple = economy, blue = travel choice; green = social connectivity).

Cause	Effect	Consequence
<ul style="list-style-type: none"> <li>• High volume of traffic on SH1 during peak periods</li> <li>• High volume of heavy vehicles (trucks, tractors, and agricultural equipment)</li> <li>• High inter-regional traffic</li> <li>• High weekend and holiday peak demands</li> <li>• Slow moving trucks (and pilot vehicles)</li> </ul>	<ul style="list-style-type: none"> <li>• SH1 is busy all day</li> <li>• Slow travel speeds</li> <li>• Poor travel time / reliability</li> <li>• Difficulty entering the SH for heavy vehicles</li> <li>• Difficult to merge (crash risk)</li> <li>• Difficult to cross SH1</li> <li>• Poor driver behaviour (e.g. merging like a zip)</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Economic</b> (productivity) impact</li> <li>• <b>Economic</b> (land value) impact for East Tinwald (rental and property \$)</li> <li>• Emergency services are delayed</li> <li>• Increased likelihood of crashes (particularly rear end)</li> <li>• Increased safety risk (actual and perceived)</li> </ul>

Item:		
<ul style="list-style-type: none"> <li>• Oversize loads travelling in peak times</li> <li>• Proximity of train tracks / crossing barriers</li> <li>• Northern approach lane geometry</li> <li>• Agricultural and residential development growth</li> <li>• Land use development south of the river (Lake Hood, West Tinwald)</li> <li>• Growing number of retirees and retirement villages and active retirees</li> <li>• Lack of route choice</li> <li>• Land use - education and workplace activities not local to either Tinwald / Ashburton</li> <li>• Key amenities on the northern side of the Ashburton river</li> <li>• Early childhood centre near places of work, rather than residence</li> <li>• Active mode provisions are limited or of poor quality on local roads</li> <li>• Narrow width of the SH1 bridge</li> <li>• Lack of physical separation between traffic and cyclists</li> <li>• Poor surface on bridge shared path</li> <li>• Narrow footpath on existing SH1 bridge</li> <li>• No public bus or on-demand transport (e.g. Uber)</li> <li>• Poor lighting on SH1</li> </ul>	<ul style="list-style-type: none"> <li>• Increased tendency for drivers to make dangerous manoeuvres</li> <li>• Increasing traffic volumes</li> <li>• Limited capacity on the State Highway</li> <li>• More congestion</li> <li>• Long detour in event of bridge closure – impact to emergency services</li> <li>• Unpleasant existing river crossing for pedestrian/cyclists</li> <li>• Cycling is unappealing</li> <li>• On-road cyclists tend only to be very confident</li> <li>• Cyclists share the road with traffic (and large trucks)</li> <li>• Less confident people drive to the start of popular recreational tracks (so a car journey becomes part of a cycling trip)</li> <li>• Personal security when crossing the bridge is compromised</li> <li>• Reliance on the car for most journeys</li> <li>• People don't make trips that would otherwise want to.</li> </ul>	<ul style="list-style-type: none"> <li>• Hard to align with GPS objectives</li> <li>• Difficult to encourage the younger generation to use active modes</li> <li>• Suppressed cycling demand</li> <li>• Increased motor vehicle travel</li> <li>• Increased emissions</li> <li>• Social disconnect</li> <li>• Community severance (both north-south, and east-west)</li> </ul>

This process allowed for draft problem statements to be more easily created. These are presented within the draft ILM in **Attachment A**.

### Problem Weightings

Stakeholder agree that based on knowledge of existing issues, that *social/economy* was the highest priority problem to address. The agreed weightings in the workshop were:

- Social and economy – 50%
- Travel choice – 30%
- Safety – 20%

Following the workshop, draft problem statements were formed based around the themes and identified causes, consequences, and effects. The process of developing the problem statements established that it was appropriate to separate social and economy into separate themes – as the economic benefits are quite distinct to the social ones.

To this end, the following weightings were identified (with themes adjusted slightly to align with government/business case terminology):

- Inclusive access – 40%
- Economic prosperity – 10%

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**Item:**

- Travel choice – 30%
  - Safety – 20%
- 

**Next Steps**

- Finalise Investment Logic Map
  - Update Evidence Base
  - Draft Part A for ADC / Waka Kotahi Review
  - Progress to Options Assessment (Part B of the DBC) if there is agreement that there is a strong case for change
- 

**Attachments**

- A) Draft Investment Logic Map
- B) ILM Presentation

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