GHD Advisory

Christchurch Regeneration Acceleration Facility Roading and Transport Improvements Investment Case

Christchurch City Council

31 October 2019

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1.1 Overview

This investment case has been developed by Christchurch City Council (Council) to set out the case for investment. It provides decision makers with the evidence required to secure approval and funding to accelerate the delivery of roading and transport improvements considered critical to the ongoing recovery and regeneration of Christchurch.

The Christchurch Regeneration Acceleration Facility (CRAF) investment in roading and transport improvements will act as a catalyst towards the development of a high-quality, safe and reliable transport network that will improve connectivity and the customer experience across Christchurch City. It will improve safety outcomes and encourage more people to walk, bike or catch public transport. The investment case has been developed to prioritise investment in the areas most in need and is expected to contribute towards a more equitable and liveable city.

Council is seeking $40 million of funding from the CRAF to accelerate progress on critical roading and transport improvement projects that are considered critical to the ongoing regeneration of Christchurch.

1.2 The Case for Change

Christchurch needs better transport infrastructure to enhance connectivity, alleviate safety issues, improve community wellbeing and to unlock future economic growth. Improved transport infrastructure, including the condition of transport assets, will support the region's growth, delivering benefits at the local, regional and national level, whilst creating a liveable, more efficient transport network for Christchurch residents.

Despite the transport investment planned across Christchurch over the next 10 years, there will remain constraints and challenges on the city's transport network without CRAF investment. Failure to invest will undermine the city's regeneration, result in worsening traffic congestion, and undermine the city's quality of life and liveability.

During a facilitated workshop with key investment partners, common themes and contributing factors were identified including:

- The Canterbury Earthquake sequence caused significant damage and disruption to the roading and transport system in Greater Christchurch. Although a significant repair and replacement programme has been undertaken, Christchurch still has a long journey ahead to improve its transport network and provide attractive and safe modal choice to residents and visitors.
- There are recognised safety issues as a result of changing trip patterns and increased movements on parts of the transport network. A particular issue identified was the high number of urban intersection crashes that occur on the Christchurch transport network.
- A dependency on single occupant vehicle travel has occurred following the earthquakes, that can be partly attributed to land use and trip changes (trip origins and destinations). Changing land use patterns and trip changes have resulted in low public transport, walking and cycling uptake in some areas of Christchurch.

Drawing on the current context and the case for change outlined above, three investment objectives have been developed to underpin this investment case.

1. To improve liveability and support the ongoing regeneration of Christchurch;
2. To reduce transport fatalities and serious injury crashes; and
3. To improve journey time and reliability of public transport services to increase patronage.

The proposed CRAF roading and transport investment has been carefully developed to meet a range of economic, social and environmental objectives. These objectives have been developed to closely align with national and regional strategic priorities, including the Government Policy Statement for Land Transport, the Canterbury Regional Land Transport Plan and the Christchurch Transport Strategic Plan.

1.3 Recommended Programme

The CRAF roading and transport recommended programme includes:

- $25-30 million to deliver integrated safety, modal choice and asset improvements to communities which experienced significant damage and disruption or increased transport demand/travel use due to a change in travel patterns following the earthquakes. The five proposed areas are Richmond, New Brighton, Linwood/Woolston, Spreydon/Somerfield/Waltham/Beckenham and Riccarton;
- $5-7 million to accelerate targeted safety improvements to reduce death and serious injury crashes; and
- $5-8 million towards the implementation of bus priority measures on key public transport routes in the city.

1.3.1 Targeted Roading and Transport Improvements

The CRAF investment in the five areas will result in approximately 138 streets benefiting from roading and transport improvements. It will address corridors where collectively 268 crashes have occurred, including 1 fatal crash, 24 serious injury crashes, 101 minor injury crashes and 142 non-injury crashes.

The types of treatments proposed vary on a street by street basis depending on the particular challenges and constraints identified. Further work is required through the detailed design phase to identify the individual treatments and proposed for each location; however, as an example the type of interventions proposed include:

- Footpath improvements, including widening, additional crossing points, dropped kerbs, tactile paving, wayfinding signage and lighting improvements.
- Slow speed treatments, including traffic calming measures, speed limit reductions, speed limit signage, parking management, line markings and Variable Message Signs.
- Access improvements, including shared paths (walking and cycling), cycle sharrow road markings, cycle signage, wayfinding signage and cycle parking.
- Asset condition, including kerb to kerb rebuilds, road narrowing, footpath and carriageway resurfacing to improve safety and accessibility outcomes.

The CRAF will improve the transport network in each of these five areas over the next three to five years. Making the transport system safer, more accessible and will improve asset condition and value for money, which will support the ongoing regeneration of the city.

1.3.2 Accelerating Delivery of Road Safety Priorities

To address critical road safety constraints and challenges the Council is proposing to invest $5-7m from the CRAF to progress targeted road safety initiatives across the Christchurch transport network (in addition to targeted safety improvements proposed for the five areas detailed under heading 1.3.1 above). The recommended programme targets corridors where collectively 829 crashes have occurred, including 9 fatal crashes and 107 serious injury crashes.

Council have prioritised a programme of road safety improvements that target eight themes. The types of treatments proposed vary on a location basis depending on the particular challenges and constraints identified; however, the type of interventions proposed include:

- Theme 1: Intersection safe system treatments to contribute towards Vision Zero outcomes: Using the NZ Transport Agency High Risk Intersection Guide, Council is proposing to use the CRAF investment to accelerate the delivery of interventions that target the highest risk intersections in Christchurch and seek to address the key risks identified at each site.
- Theme 2: School safety: To encourage more young people to walk and cycle to school and college Council is proposing to invest in pedestrian crossing and footpath improvements.
- Theme 3: Red light running initiatives: To address the high proportion of intersection crashes Council is proposing to implement a suite of measures to reduce instances of red light running at signalised intersections. Treatments include installing mast arms to improve the visibility of traffic signals and working with the NZ Police to implement enforcement measures such as red light running cameras.
- Theme 4: Speed management (corridors): The CRAF will enable Council to proactively deliver safety improvements at high risk locations, areas of growth and to support new developments. Corridors identified for CRAF investment relate to speed management and the treatment proposed relates to speed limit reviews and a potential reduction in the posted speed limit on these corridors.
- Theme 5: Signalised intersections and right turn safety: To reduce the risk of crashes at signalised intersections Council will implement a suite of treatments such as adding dedicated right turn arrows to traffic signal phases, improving the visibility of traffic signals and reducing the speed limit at high risk, multi-movement intersections.
- Theme 6: Active speed management (intersections): As per Theme 4, however targeting high risk intersections where excess speed has been identified as a key contributing factor in a number of crashes. A speed review of the approaches to the intersections will be completed and a potential reduction in the posted speed limit will be implemented on the intersection approach arms.
- Theme 7: Route treatments: Council is proposing to implement minor safety improvements to address high crash risks. These are typical low cost interventions that are delivered as part of Council's minor road safety improvements programme.
- Theme 8: Community Board road safety initiatives

1.3.3 Public Transport Network Improvements

A separate business case is being progressed by the Greater Christchurch Partnership to determine the public transport routes that should be prioritised for improvements as part of the recommended programme.

1.4 Economic Case

The economic appraisal of the recommended programme (five areas and targeted safety improvements) has been undertaken in accordance with the NZ Transport Agency's Economic Evaluation Manual (EEM) procedures.

The main benefits that have been referred to within this report relate to:

- Reduced Vehicle Operating Costs - due to reductions in local road roughness levels (per km); and
- Reduced crash costs – assumed a crash reduction rate of 15% in the five areas and specific reduction rates have been applied to each of the targeted safety themes.

The analysis indicates an expected **Benefit Cost Ratio (BCR) of 4.4 for the recommended programme**.

An assessment of the individual investment areas (five areas and targeted safety improvements) has also been undertaken to ensure value for money. Overall the five areas have a combined BCR of 1.7. The targeted safety improvements have a combined BCR of 20.

It is noted that this investment case has adopted a conservative approach to benefit calculation. The CRAF investment is likely to result in additional transport benefits related to travel time savings, trip reliability improvements, mode shift/uptake of active modes and public transport and a reduction in CO_2 emissions.

It is also important to recognise that the BCR only provides part of the story. The CRAF investment is anticipated to have a number of strategic transport benefits as well as a number of social, environmental and economic benefits, as identified within this investment case, which cannot be fully demonstrated within the current EEM.

Recent transport improvements undertaken in the Richmond area demonstrate the impact to quality of life that these transport projects can have on the local community. Council recently received the following feedback from the Secretary of the Richmond Residents' and Business Association:

I have had numerous comments from residents who have all stated in different ways that the rebuild of the roads: North Avon, Randall, Stapletons, etc. has generally lifted spirits in the community and allowed us to start shedding the somewhat depressing feeling of living in a neglected area of the city. This has been perhaps reflected in part in the way residents are celebrating the planting programmes and in caring for the grass berms outside their own properties. A key comment for me was the statement by an elderly resident who was seriously considering selling up and moving elsewhere when she stated, as we stood and observed a recently completed part of the programme: "I think I'll stay here now - it looks really nice now!"

1.5 Assessment Profile

When evaluating the case for CRAF investment, the Government Policy Statement (GPS) requires local government to demonstrate how investment shows alignment with the outcomes and priorities sought through the GPS. Evaluation of an investment case must consider a number of factors including, but not limited to, achieving safety, access, environmental, and value for money outcomes.

An evaluation has been undertaken using the NZ Transport Agency Investment Assessment Framework for the 2018-21 National Land Transport Programme to assess the investment case across three factors:

- An assessment of the investment case against the outcomes sought through the GPS – known as results alignment;
- Evaluation of the economic efficiency of the investment case (BCR); and

- Assessment of the priority of the investment case (prioritisation).

1.5.1 Results Alignment – High

An indicative 'High' rating for results alignment has been identified for the CRAF roading and transport improvements.

1.5.2 Prioritisation

Based on the results alignment and overall BCR for the recommended programme of 4.4, the priority given to the CRAF investment case is 4. A prioritisation evaluation provides an assessment of the level of priority given to the investment case if funding were to be sought through the National Land Transport Fund (NLTF).

1.6 Conclusions and Next Steps

This investment case is seeking investment from the CRAF to help address critical transport challenges and enable the city to continue to transition from recovery to regeneration, improving liveability outcomes for resident and visitors in a timely manner. The regeneration of Christchurch's transport systems and road network are integral to the wider vision for Greater Christchurch of providing a vibrant centre that supports regional economic activity and employment.

This investment case seeks formal approval from Treasury and the Crown to commence the implementation of the recommended programme of accelerated roading and transport improvements.

At this stage the recommended programme has only been developed to meet the investment case requirements. Additional work is still required prior to implementation, which includes (but is not limited to):

- Investigation/scheme appraisal
- Formal public consultation as specified under the Local Government Act
- Safety audit process
- Obtaining elected member approval
- Detailed design
- Supplier tender/procurement process
- Construction (and post construction safety audits)

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2. Introduction

2.1 Purpose

This investment case has been developed by Christchurch City Council (Council) to set out the case for investment. It provides decision makers with the evidence required to secure approval and funding to accelerate the delivery of roading and transport improvements considered critical to the ongoing recovery and regeneration of Christchurch.

The Christchurch Regeneration Acceleration Facility (CRAF) investment in roading and transport improvements will act as a catalyst towards the development of a high-quality, safe and reliable transport network that will improve connectivity and the customer experience across Christchurch City. It will improve safety outcomes and encourage more people to walk, bike or catch public transport. The investment case has been developed to prioritise investment in the areas most in need and is expected to contribute towards a more equitable and liveable city.

2.2 Approach

The starting point for this investment case was the $300 million Christchurch Regeneration Acceleration Facility (CRAF) announcement in August 2017 by the Labour Party as part of its pre-election "Plan for Canterbury" to accelerate the Canterbury recovery.

The coalition government confirmed the establishment of the CRAF in Budget 2018 and allocated approximately $300 million for this purpose. The facility reflects the unique circumstances of Christchurch and the commitment of the coalition government to accelerate the ongoing regeneration of the city by funding a number of local priorities (including anchor projects as committed to in the 2013 Cost Sharing Agreement between the government and the Council).

The purpose of the CRAF is to provide certainty (via funding) for key Christchurch regeneration projects, to ensure that they occur as quickly as possible. Specific projects eligible for funding include:

- The proposed multi-use arena;
- Projects within the residential red zone (Te Papa Ōtākaro / Avon River Precinct); and
- Horizontal infrastructure projects (roading and transport improvement projects).

The Crown have advised that funding will be released upon completion of a two-step process:

- Step one being consideration of an investment proposal; and
- Step two being consideration of a more detailed investment (business) case.

The decision makers at each step are the relevant Crown Ministers and/or Cabinet.

Council has already completed an initial Investment Proposal for the proposed roading and transport improvements. The Investment Proposal was submitted for consideration in March 2019 and approval to proceed to a full investment case was received from both the Minister responsible for Greater Christchurch Regeneration and the Minister of Finance in June 2019.

A copy of the Investment Proposal is provided at **Appendix A**.

Since the completion of the Investment Proposal there has been substantive work completed to identify, plan and prioritise solutions that are feasible, suitable and offer best value for money. This investment case has been informed by the Treasury's Better Business Case guidance. This report seeks to demonstrate how the proposed CRAF roading and transport improvements:

- are supported by a robust case for change that aligns with wider objectives – the **'strategic case'**;
- represent value for money – the **'economic case'**;
- are commercially viable – the **'commercial case'**;
- are financially affordable – the **'financial case'**; and
- are achievable – the **'management case'**.

The Strategic Case centres on the opportunity for Council to accelerate the delivery of critical improvements that will help alleviate the city's transport constraints. The Strategic Case demonstrates that a combination of limited transport choice and accessibility, transport safety and poor asset condition undermines development, exacerbates social issues and puts the ongoing regeneration of the city at risk.

The Economic Case demonstrates how delivering safety and accessibility improvements, provides benefits at the local, regional and national level that justify investment. It outlines the benefits of this proposed investment and demonstrates how the CRAF projects represent good value-for-money.

The Financial, Commercial and Management Cases set out how the CRAF investment is proposed to be administered by Council. The Financial Case outlines the proposed expenditure and affordability of the recommended programme for each investment party. The Management and Commercial Cases outline how (and by whom) the recommended programme is proposed to be planned, developed, procured and delivered. This will be reviewed and developed further if the CRAF roading and transport improvements are progressed to the detailed design and pre-implementation phase.

Each case is clearly set out as a respective chapter within this investment case.

Figure 1 Example of Transport Improvements - An Accessible City Programme (Cambridge Tce.)[1]

[1] Image sourced from www.Christchurchnz.com (image library)

2.3 Partners and Key Stakeholders

This investment case has been developed collaboratively with key stakeholders as identified in Table 1.

Table 1 Project Partners

Partners	Knowledge/ involvement
Christchurch City Council	Christchurch City Council (Council) plans, constructs, operates and maintains the local transport network within the city boundary. Council is the problem owner seeking investment from the CRAF.
Minister for Greater Christchurch Regeneration, Minister of Finance	Responsible for reviewing and approving the detailed CRAF roading and transport investment case (subject to delegation from Cabinet).
NZ Treasury	Responsible for monitoring and managing the financial affairs of the Crown. Also provides advice to relevant Ministers.
NZ Transport Agency	The NZ Transport Agency is responsible for planning, investing, improving, and operating the State Highway network. The NZ Transport Agency also co-invests in activities on local roads, public transport, and walking and cycling through the National Land Transport Fund (NLTF).
Environment Canterbury	Environment Canterbury (ECan) is responsible for planning and developing the Canterbury public transport system. ECan also prioritises investments in the land transport system through the Canterbury Regional Land Transport Plan. Co-investment partner in the parallel Greater Christchurch Public Transport Futures Business Cases (alongside Greater Christchurch Partners[2]).

This investment case has incorporated public input from recent consultation processes including submissions to the Council's 2018-2028 Long Term Plan (LTP) and the 2018 Life in Christchurch: Transport Survey, which received more than 3,000 responses from Christchurch residents.

[2] Greater Christchurch Partnership members include: NZ Transport Agency, Environment Canterbury, Christchurch City Council, Selwyn District Council and Waimakariri District Council.

3. The Strategic Case

The Strategic Case outlines the context for this investment and the case for change. It discusses the key transport constraints that are limiting the city's potential and the ability of the CRAF investment to support the ongoing regeneration and growth of Christchurch into the future.

It comprises four parts:

- **The Importance of Regeneration** explores the events that have led to the need for additional investment in the Christchurch transport system and briefly outlines the proposed investment areas.
- **The Case for Change** provides evidence to support the three identified challenges which, unless addressed, will act to constrain the ongoing regeneration of the city.
- **The Objectives, Scope and Strategic Fit** details the investment objectives, existing arrangements and business needs, together with an assessment of strategic fit with relevant national, regional and local strategies, plans and policies.
- **The Benefits of Investment** outlines the benefits of the proposed roading and transport improvements.

3.1 The Importance of Regeneration

Nine years on from the Canterbury earthquakes the city of Christchurch is transitioning from recovery to regeneration. Following the 2010 and 2011 earthquakes, Christchurch continues to face the challenge of redeveloping a vibrant city that will attract and retain people to participate, invest, work, live and visit.

The Christchurch transport network suffered considerable damage and disruption following the Canterbury earthquake sequence. The earthquakes not only caused damage to transport infrastructure and key assets, but also altered travel behaviours as a result of changing land use patterns.

The New Zealand government has committed significant resources to assist with the recovery and regeneration of the city. Substantial progress has been made since the earthquakes to repair damaged transport assets and rebuild the city. Businesses and residents are now relocating back to the central city and travel patterns have stabilised.

As a Road Controlling Authority, Council is responsible for the maintenance and renewal of transport assets and the operation of the local transport system (excluding public transport operations and the State Highway network). The CRAF presents a unique opportunity for Council to accelerate the delivery of critical safety, modal choice and asset improvements to the Christchurch transport system and respond in a timely manner to meet local residents' needs.

Council is seeking $40 million of funding from the CRAF to accelerate progress on roading and transport improvement projects that are considered critical to the ongoing regeneration of Christchurch:

- $25-30 million to deliver integrated safety, modal choice and asset improvements to communities which experienced significant damage and disruption or increased transport demand/travel use due to a change in travel patterns following the earthquakes. The five proposed areas are Richmond, New Brighton, Linwood/Woolston, Spreydon/Somerfield/Waltham/Beckenham and Riccarton;
- $5-7 million to accelerate targeted safety improvements to reduce death and serious injury crashes; and
- $5-8 million towards the implementation of bus priority measures on key public transport routes in the city.

3.2 The Case for Change

Christchurch needs better transport infrastructure to enhance connectivity, alleviate safety issues, improve community wellbeing and to unlock future economic growth. Improved transport infrastructure, including the condition of transport assets, will support the region's growth, delivering benefits at the local, regional and national level, whilst creating a liveable, more efficient transport network for Christchurch residents.

Liveability means different things to different people. For the purpose of this investment case liveability is a broad concept that is linked to economic, environmental and social 'sustainability', and explores what makes communities, precincts and cities great places to live, work and play.

This section outlines the specific transport constraints and challenges facing the city.

A facilitated Investment Logic Mapping (ILM) workshop was held in Christchurch on 1st March 2018. Representatives from Council, NZ Treasury, NZ Transport Agency and the Department of Prime Minister and Cabinet participated in the workshop.

A list of workshop participants and the organisation they represent is provided in **Appendix B**.

The aim of the ILM workshop was to confirm the current and likely future constraints and challenges associated with the Christchurch transport system and to identify the benefits from the proposed CRAF investment. Despite the transport investment planned across Christchurch over the next 10 years, there will remain constraints and challenges on the city's transport network without CRAF investment. Failure to invest will undermine the city's regeneration, result in worsening traffic congestion, and undermine the city's quality of life and liveability.

During the workshop common themes and contributing factors were identified including:

- The Canterbury Earthquake sequence caused significant damage and disruption to the roading and transport system in Greater Christchurch. Although a significant repair and replacement programme has been undertaken, Christchurch still has a long journey ahead to improve its transport network and provide attractive and safe modal choice to residents and visitors.
- There are recognised safety issues as a result of changing trip patterns and increased movements on parts of the transport network. A particular issue identified was the high number of urban intersection crashes that occur on the Christchurch transport network.
- A dependency on single occupant vehicle travel has occurred following the earthquakes, that can be partly attributed to land use and trip changes (trip origins and destinations). Changing land use patterns and trip changes has resulted in low public transport, walking and cycling uptake in some areas of Christchurch.

The CRAF investment will act as a catalyst to effectively and efficiently tackle these constraints, improving the transport network to support the city's ongoing regeneration. This section explores these constraints and challenges in more detail, before explaining how the CRAF investment will enable Council to accelerate the delivery of roading and transport improvements.

Three problem statements were developed during the ILM workshop which are consistent with previous Council transport investment cases and have been refined over the course of the development of this investment case.

3.2.1 Problem Statement One – Community Wellbeing and Accessibility (inclusive access)

As a result of the Canterbury earthquake sequence the transport system in Christchurch provides a lower level of service than other New Zealand cities, which contributes to a reliance on the private car, increased personal and collective safety risks, and impacts community cohesion and social wellbeing.

The Canterbury earthquake sequence that began on 4th September 2010 contained four main earthquakes and thousands of aftershocks. The second 6.3 magnitude earthquake of 22nd February 2011, centred just east of the city, was one of New Zealand's worst natural disasters.

One hundred and eighty five people were killed and alongside the tragic loss of life, more than 8,000 households were permanently displaced by land damage, 90 percent of residential properties were damaged in some way and 80 percent of buildings in the Central City had to be demolished.

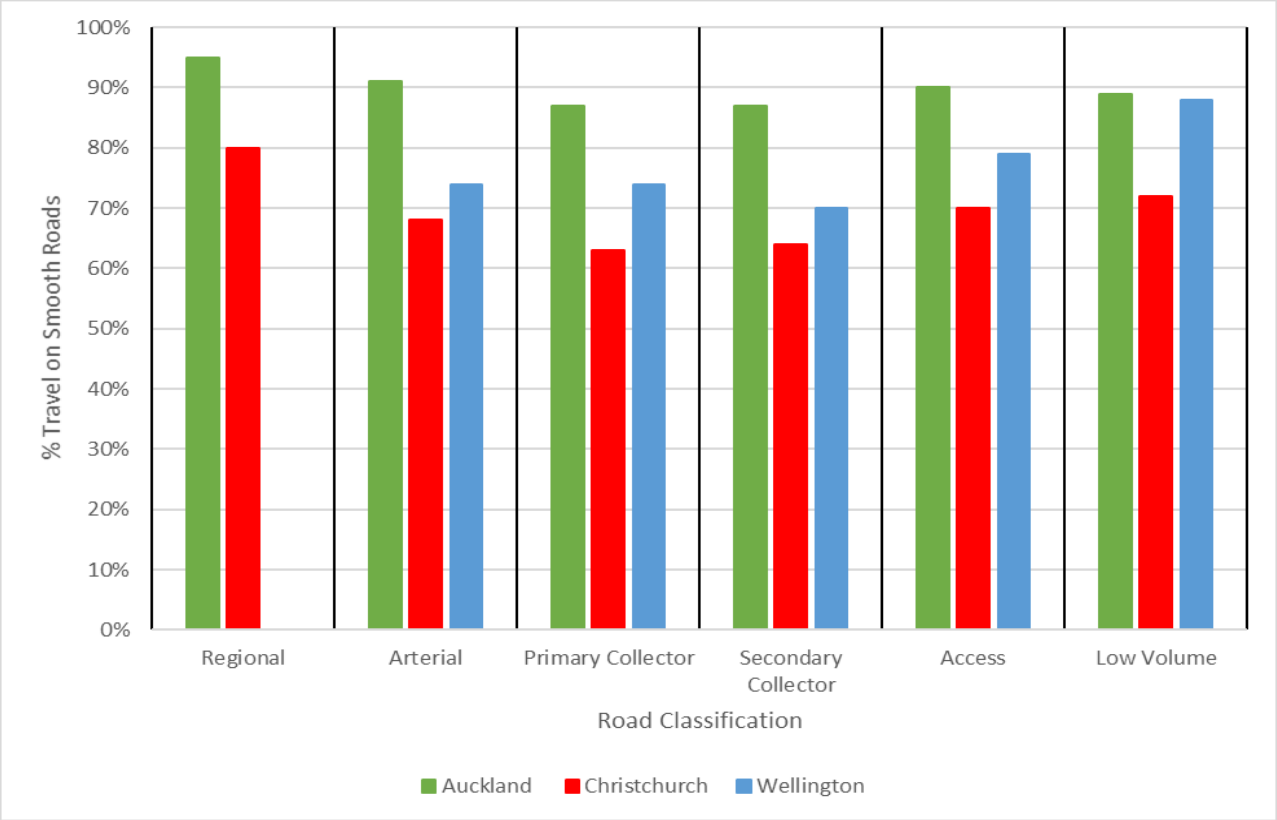
The impacts of the Canterbury earthquake sequence continue to be observed across the city and it is anticipated that the shape of urban Christchurch will continue to change during the ongoing regeneration period, particularly over the next 10-15 years. The condition of the transport network and corresponding levels of service has been severely impacted by the earthquakes.

Council owns, plans and manages approximately 3,000 kilometres (km's) of local roading network that supports all transport activities in Christchurch. The NZ Transport Agency and Environment Canterbury are key stakeholders in this network. Some 300 km's of this network was directly and severely damaged by the Canterbury earthquake sequence, or was required to be dug up (and subsequently repaired) so as to enable repairs to other horizontal infrastructure that exists under the road corridor.

The Stronger Christchurch Infrastructure Rebuild Team (SCIRT) was created in 2011 to repair earthquake damaged horizontal civil infrastructure. SCIRT's $2.2 billion five-and-a-half year programme was funded by the New Zealand Government and Christchurch City Council and was the largest infrastructure project in New Zealand's history. It involved more than 700 individual projects across the city repairing and rebuilding underground sewage, storm water and fresh water pipes, rebuilding wastewater pump stations as well as roads, bridges and retaining walls.

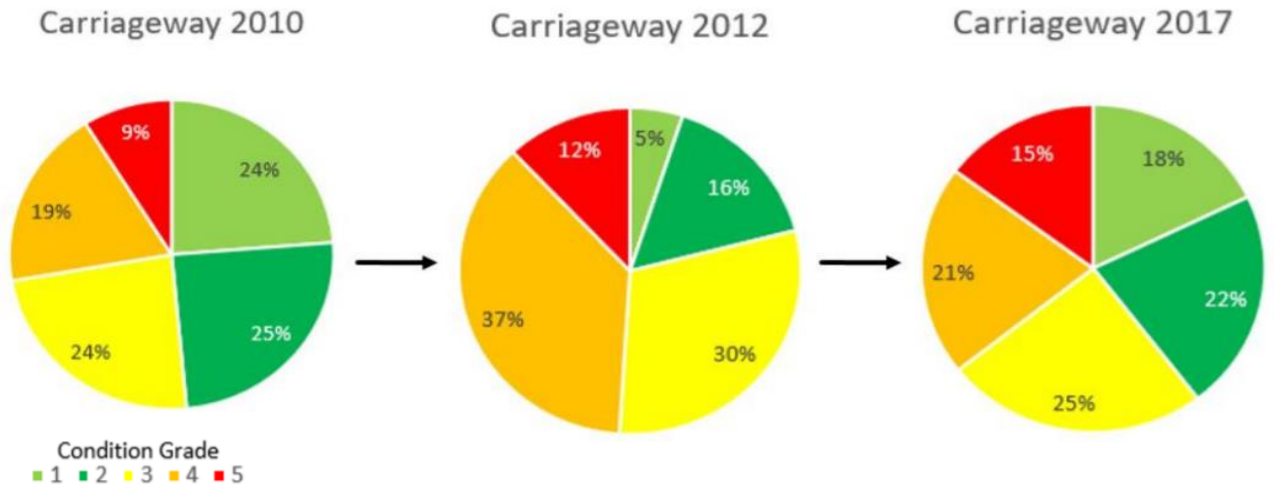
Despite the significant investment from the government and Council, there are many assets that still require remediation over the next 30 years to bring the network back to a state comparable to pre-earthquake levels and comparable with other New Zealand urban centres. If this is not addressed then asset condition and quality of the network will remain below the New Zealand average with customer safety, accessibility and comfort compromised. As shown in Figure 2 the percentage of roads that are smooth in Christchurch post-earthquakes is substantially lower than other cities across all One Network Road Classification (ONRC) categories.

Figure 2 Smooth Travel Exposure in Christchurch Compared to other New Zealand Cities[3]



Prior to the earthquakes, nine percent of the roading network was in the lowest condition category (condition 5 – very poor); however, post-earthquakes this increased to 15 percent in the lowest condition category, and has remained at this level since as shown in Figure 3. In comparison, only 3.2 percent of the Auckland roading network is classified in the lowest condition category[4].

Figure 3 Assessed Condition of Roads, Before and After the Earthquakes and Current[5]



[3] ONRC Reporting Tool, 2018

[4] Auckland Transport Asset Management Plan 2018-2021, page 105

[5] Christchurch City Council Transport Asset Management Plan, 2018

The roading network is an integral part of Council's infrastructure. It links people and places and enables people to undertake the activities that make up their daily lives. Easy movement of, and access to, goods and services supports economic recovery and growth of the City. Council's role is to own and operate this infrastructure on behalf of citizens and manage it in such a way that it meets their needs now and into the future and support economic growth by making it easier for people, visitors and organisations to be connected with each other.

The transport system in a number of Christchurch communities provides a much lower level of service than other New Zealand cities. This is primarily due to poor quality streets with many pavements and roads damaged as a result of the earthquakes (potholes, drainage issues and uneven surfaces) whereas others have only had patchwork repairs that are prone to failure. This contributes to lower levels of modal choice (particularly pedestrian footfall and cycling), increases personal and collective safety risks within these areas and impacts community cohesion and social wellbeing.

Short trips to key services and amenities within some local communities are not easy to make on foot or by bike, particularly for vulnerable users such as school children, the elderly, the mobility impaired, or those with pushchairs. This is due to the condition of roads and footpaths in some Christchurch communities. Potholes, uneven surfaces and poor drainage increases the risk of trips and falls and exacerbates the reliance on the private car, even for relatively short trips within local communities.

Evidence also suggests that the poor road condition has a detrimental impact on vehicle operating costs as a result of additional wear and tear on vehicles. This also reduces the comfort of public transport services which contributes towards a lower than average bus patronage when compared with other major New Zealand urban centres.

These community insights are supported by recent results from the annual Life in Christchurch Survey which indicate that resident satisfaction with the roading (and footpath) network is low. Only 20 percent of recently surveyed participants were satisfied with the condition of Christchurch roads and only 34 percent were satisfied with Christchurch footpaths.

Table 2 shows how levels of satisfaction with roads and footpaths in Christchurch have changed over time. The level of satisfaction with the condition of Christchurch roads and footpaths remains well below pre-earthquake levels.

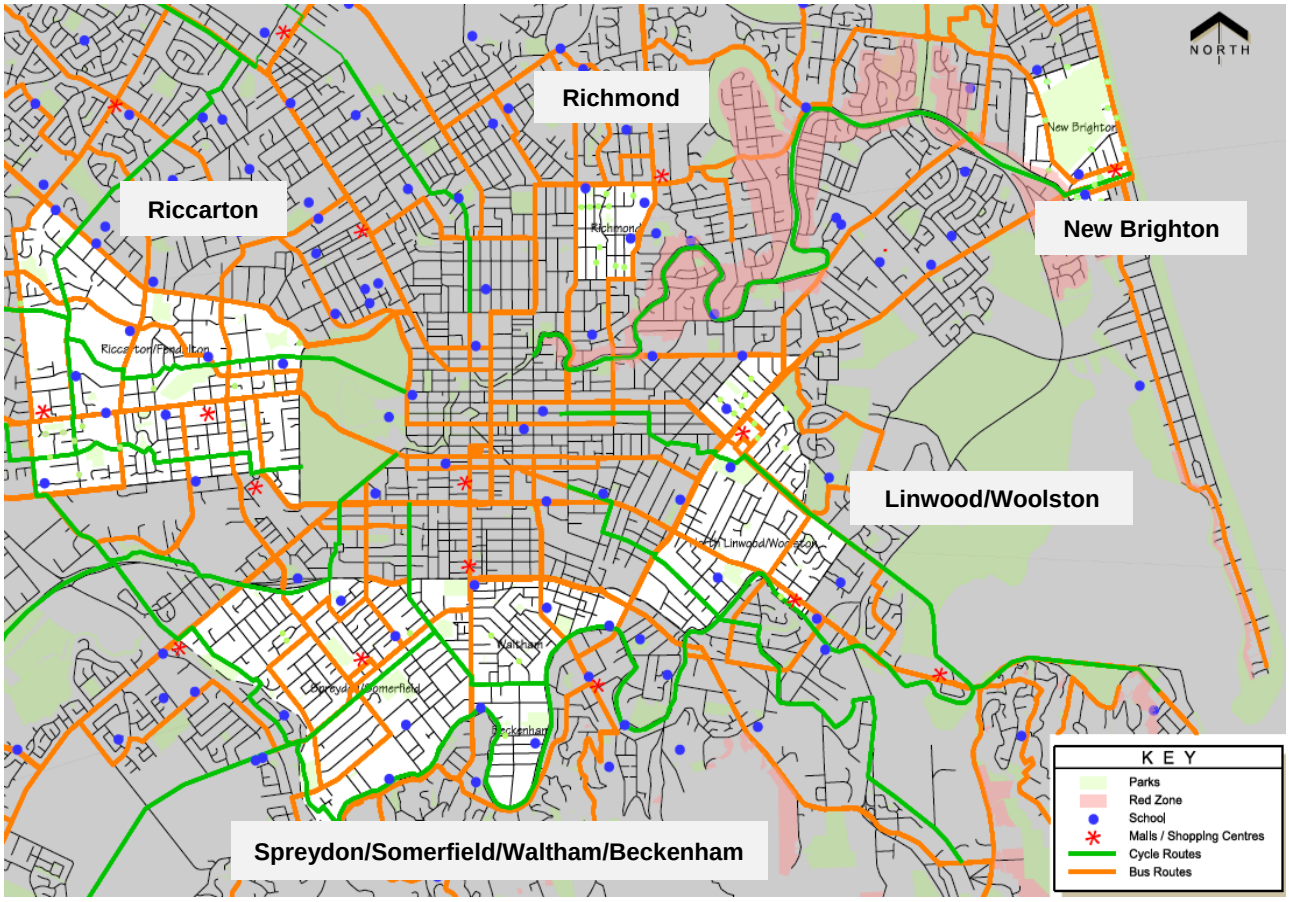
Table 2 Christchurch City Council Customer Insight Survey

Survey Question	2010	2011	2012	2013	2014	2015	2016	Change from 2013
Satisfaction with the Condition of Christchurch Roads.	63	-	40	*35*	27	30	37	↑ 2%
Satisfaction with the Condition of Christchurch Footpaths.	67	-	46	45	43	51	51	↑ 6%

3.2.1.1 Area Based Approach

To address these constraints and challenges the Council is proposing to target CRAF investment towards the areas where accessibility, safety and road condition is undermining the regeneration of the city and impacting the wellbeing of residents. The five areas prioritised for CRAF investment are shown in Figure 4.

Figure 4 Map showing the Five Communities Prioritised for Investment



A detailed evidence based approach has been undertaken to prioritise investment within these areas. Detailed 'Report Cards' have been developed for each of the five areas to document the characteristics of each community. The report cards are provided in full at **Appendix C** and support the evidence base provided in the Strategic Case.

The 'Report Cards' include an evidence based assessment of three key transport indicators to evidence the constraints and challenges and to prioritise the individual corridors for investment within each area. The three transport indicators assessed are detailed below and the full prioritisation and assessment methodology is provided in **Appendix D**.

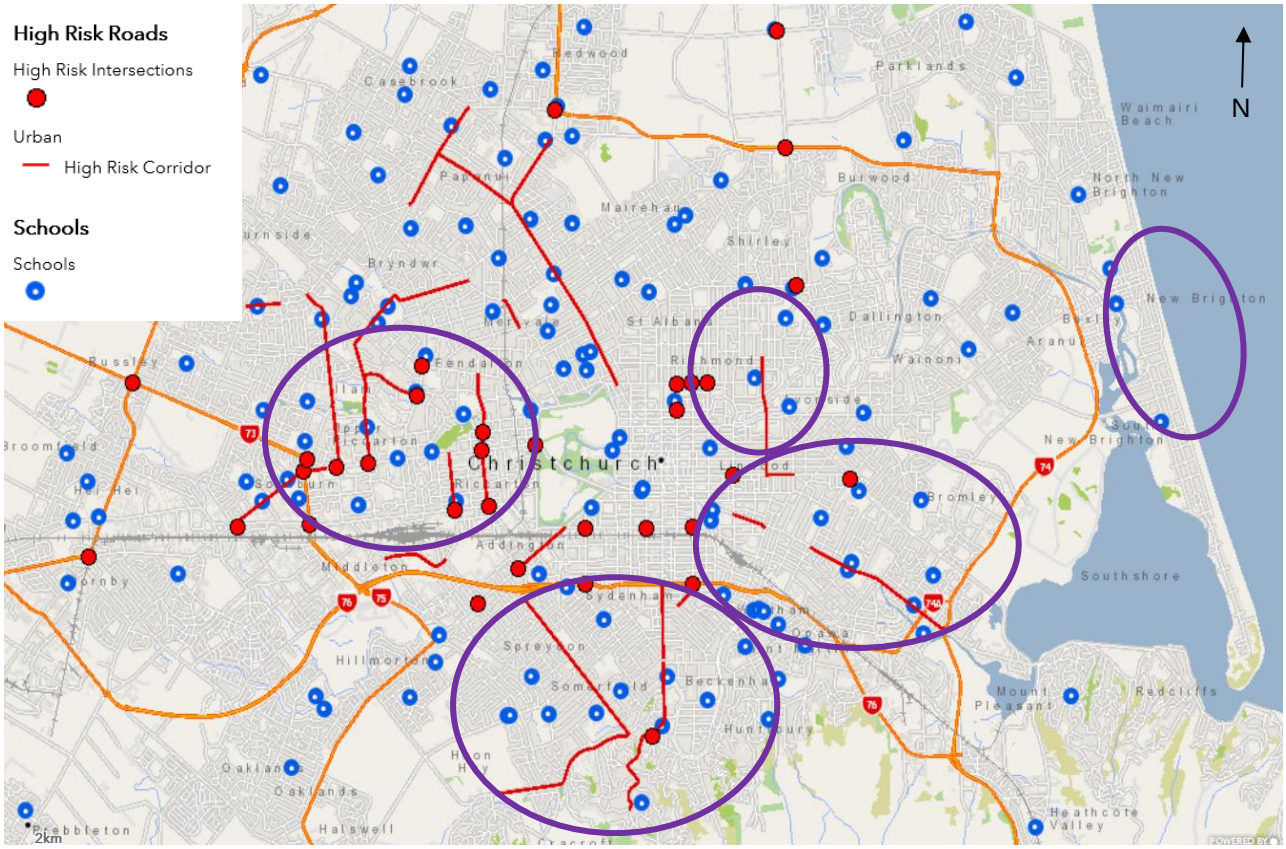
- **Access:** An assessment of five sub-indicators has been completed to identify the place and movement function of the transport corridors within each area. The five indicators that make up the accessibility grade are:
    - Does the corridor form part of a core public transport route;
    - Does the corridor form part of a suburban or connector public transport route;
    - Does the corridor form part of a Major Cycle Route;
    - Is a school/s located on the corridor; and
    - Are key trip attractors located on the corridor e.g. shops, cafes, parks, churches, community facilities and key services such as doctor surgery or dentist.

- **Safety:** An assessment of six sub-indicators has been undertaken to identify the safety rating of the transport corridors within each area. The six indicators that make up the safety grade are:
    - Collective risk rating: a measure of the total number of fatal and serious injury crashes per kilometre over a section of road;
    - Personal risk rating: a measure of the danger to each individual using the road being assessed. Personal risk takes into account the traffic volumes on each section of road and shows the likelihood of a driver or rider, on average, being involved in a fatal or serious injury crash on a particular stretch of road;
    - The number of fatal injury crashes over the past five years;
    - The number of serious injury crashes over the past five years;
    - The number of minor injury crashes over the past five years; and
    - The number of non-injury injury crashes over the past five years.

Figure 5 provides a citywide snapshot of both high risk intersections (the top 200 high risk intersections nationwide based on collective risk) and high risk corridors (based on a NZ Transport Agency defined risk assessment process).

The map also shows the location of schools and the five areas identified for CRAF roading and transport investment to demonstrate the connection between the areas selected for CRAF investment and the highest safety risk intersections and corridors in the city.

Figure 5 Map of High Risk Urban Roads[6]



A separate case for investment in targeted safety improvements across the city is provided in the next section of this Strategic Case under the heading “Problem Statement Two – Transport Safety”.

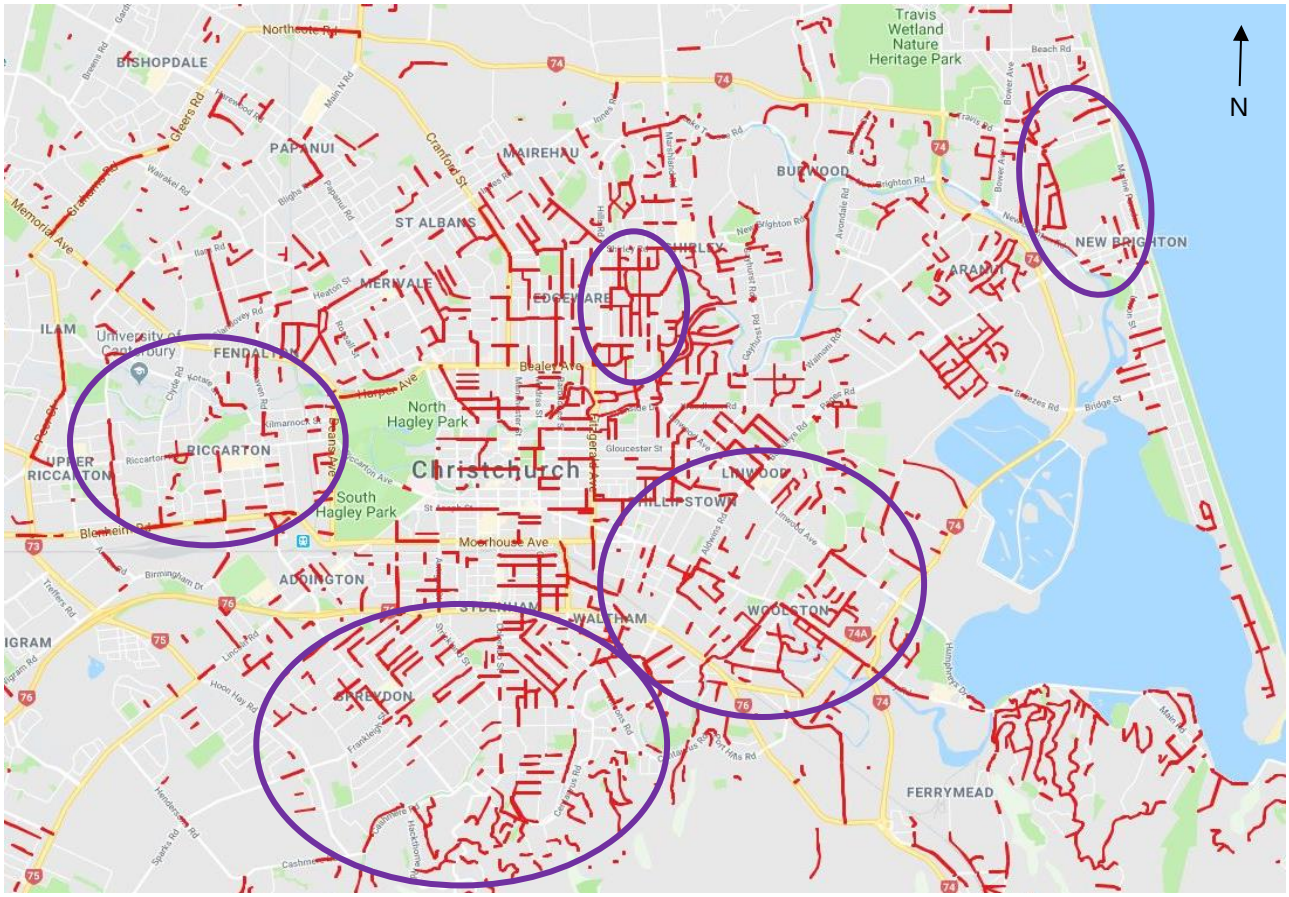
- **Asset Condition:** An assessment of a single indicator that has been developed following detailed condition audits of each corridor within the five areas prioritised for CRAF investment. The indicator identifies the roughness rating of each corridor and footpath, which informs the priority for treatment.

Figure 6 provides a citywide snapshot of the roads and footpaths in Christchurch that are categorised as being in a very poor condition (the lowest rating).

The map also shows the location of schools and the five areas identified for CRAF roading and transport investment to demonstrate the connection between the areas selected for CRAF investment and the areas of lowest asset condition (roads and footpaths).

[6] High Risk Road data extracted from Mega Maps – NZ Transport Agency/Abley Limited 30.08.2019

Figure 6 Map of Very Poor Condition Roads[7]



To summarise, transport infrastructure acts as a key enabler of economic growth and regeneration, it also forms a key aspect of an individual's daily life. Poor transport connectivity and travel choice, safety and asset condition therefore act as a barrier to growth and liveability, contribute to traffic congestion and undermine the regeneration of the city.

These community transport constraints matter, and ultimately constrain the city's regeneration. They undermine the quality of life of local residents and exacerbate spatial inequalities, as people find it difficult to access key services and amenities.

[7] Map Provided by Christchurch City Council from RAMM Database (August 2019).

3.2.2 Problem Statement Two – Transport Safety

Christchurch has a high proportion of deaths and serious injuries as a result of crashes at urban intersections, crashes that involve excess speed or active modes which leads to a high social cost to the community.

The NZ Transport Agency Communities at Risk Register has been used to inform the development of the road safety priorities for CRAF investment. The register identifies communities of road users that are over-represented in terms of road safety risk. Intersections were the one area of high national strategic priority where Christchurch City was amongst the most over-represented in crash statistics (3rd position). Appropriate speeds and safety for road users cycling and walking were also identified as a key risk area for Christchurch in the Road Safety Action Plan July 2018 to June 2019, provided in full at **Appendix E**.

The severity of a crash is determined by the most severely injured casualty in the crash. Injury severity in New Zealand is classified as fatal, serious, or minor:

- Fatal: Injuries that result in death within 30 days of a crash;
- Serious: Fractures, concussion, internal injuries, crushing, severe cuts and lacerations, severe general shock necessitating medical treatment, and any injury involving removal to and detention in hospital; and
- Minor: Injuries which are not serious but which require first aid, or cause discomfort or pain to the person injured, for example sprains and bruises.

The NZ Transport Agency Crash Analysis System (CAS) data on crashes resulting in death and serious injury has been used as the primary information source, covering the period 01 July 2013 to 30 June 2018. Over the period there were 835 crashes that resulted in death or serious injury in Christchurch[8]. In total, there were 63 fatal crashes and a further 772 serious injury crashes. Of these fatal and serious injury crashes:

- 521 occurred at intersections (62 percent of all fatal and/or serious injury crashes);
- 118 had “travel speed” as a crash factor (14 percent of all fatal and/or serious injury crashes); and
- 287 involved a pedestrian, wheeled pedestrian, cyclist or skateboard/in-line skates (34 percent of all fatal and/or serious injury crashes).

Council has a Level of Service to reduce the number of deaths or serious injuries from all crashes on the local road network by five or more per year, and for this to be under 100 per year within 10 years.
New Zealand Police’s Road Policing Action Plan 2018-21 outlines a national target of five percent annual reduction in road deaths. Each of the road safety priority areas is evidenced further below.

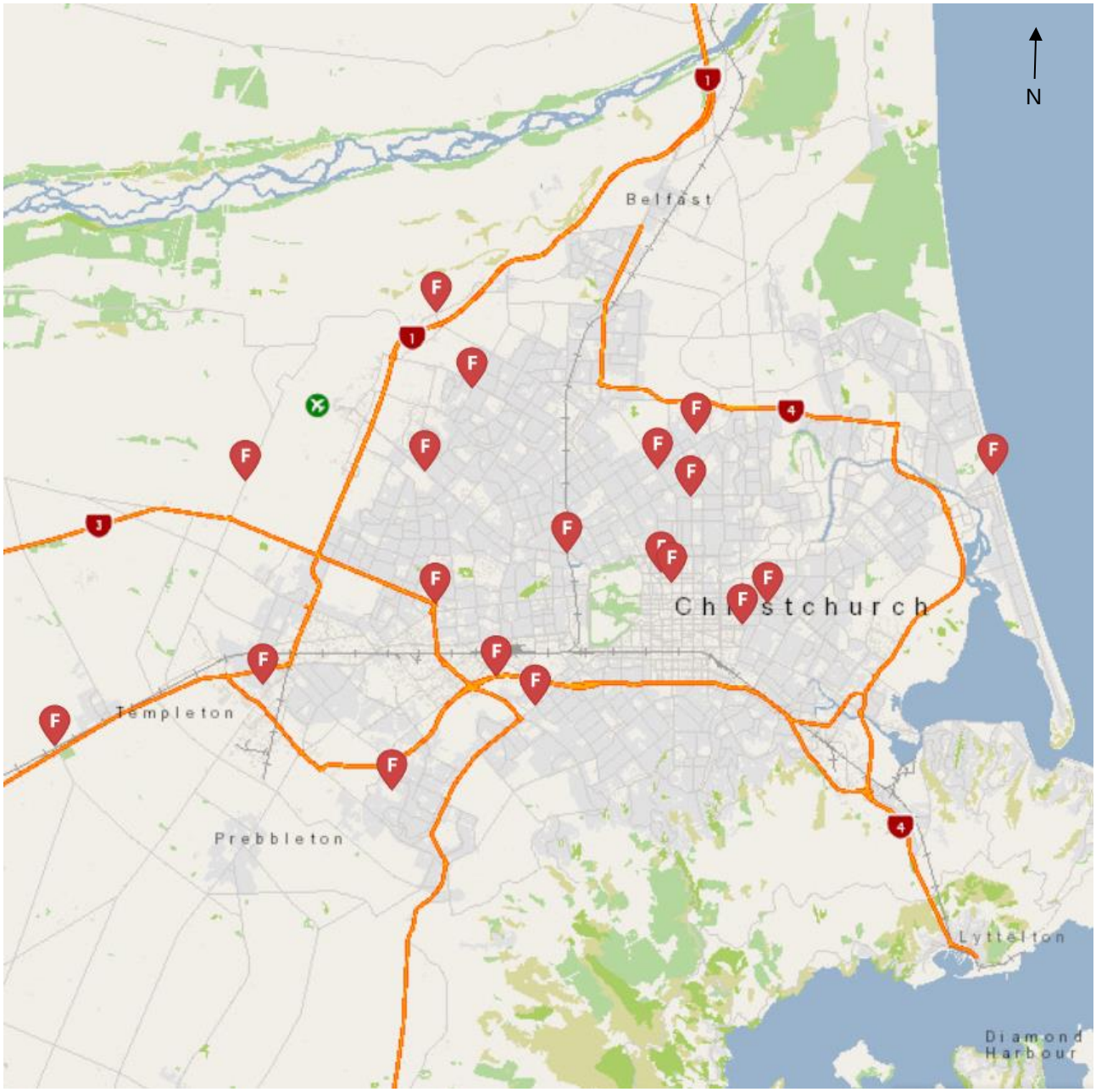
Intersections

Increasing safety at intersections is identified as one of the government's main priorities in the “Road to Zero – National Road Safety Strategy“. Intersection crashes in Christchurch are of concern due to the number of deaths and/or serious injuries and they represent a high level of collective and personal risk. Both the National Road Safety Strategy and the Road Safety Action Plan for Christchurch prioritise making intersections safer. This can be achieved through a combination of road engineering, driver education and enforcement.

The location of fatal injury crashes at intersections in Christchurch is shown in Figure 7 for the five year period 01 July 2013 to 30 June 2018.

[8] Includes the local road network, State Highway network and off road reported injury crashes from NZTA Crash Analysis System

Figure 7 Fatal Crashes at Intersections (01 July 2013 to 30 June 2018 Local Road Network)[9]



The NZ Transport Agency Crash Analysis System has been used to analyse fatal and serious injury crashes at intersections, to compare Christchurch statistics against data from Auckland and Wellington. Over the five year period 01 July 2013 to 30 June 2018, in Christchurch there were a total of 432 fatal and/or serious injury crashes at intersections (local road network), accounting for 65 percent of all fatal and/or serious injury crashes. In comparison, over the same time period 53 percent of fatal and/or serious injury crashes in Auckland and the Wellington region occurred at intersections as shown in Table 3.

[9] NZ Transport Agency Crash Analysis System

Table 3 Fatal and Serious Injury Crashes by Location, New Zealand Cities[10]

City	Mid-Block (%)	Intersection (%)
Auckland	47%	53%
Christchurch	35%	65%
Wellington (region)	47%	53%

Of the 432 fatal and/or serious injury crashes at intersections in Christchurch, speed ('too fast for conditions') was a contributing factor of 59 of these crashes, and 'failed to give way or stop' was a contributing factor in 216 of these crashes.

Appropriate Speed

Managing speed on the local road network to safe levels is important to reduce deaths and serious injuries. The results of all crashes are strongly influenced by impact speed. Travel speed was identified as a contributing factor in 118 death and/or serious injury crashes in Christchurch over the same five year period (01 July 2013 to 30 June 2018). Of these crashes, 26 occurred on the State Highway network and 92 occurred on the local road network (40 at intersections and 52 midblock).

The NZ Transport Agency Crash Analysis System has been used to analyse fatal and serious injury crashes where travel speed was identified as a contributing factor, to compare Christchurch statistics against data from Auckland and Wellington. Over the five year period 01 July 2013 to 30 June 2018, in Christchurch there were a total of 432 fatal and/or serious injury crashes where travel speed was identified as a contributing factor (local road network), accounting for 14 percent of all fatal and/or serious injury crashes. In comparison, over the same time period 21 percent of fatal and/or serious injury crashes in Auckland and 24 percent in the Wellington region identified travel speed as a contributing factor as summarised in Table 4.

Table 4 Fatal and Serious Injury Crashes Involving Travel Speed, New Zealand Cities[11]

City	Proportion of Fatal and/or Serious Injury Crashes Involving Travel Speed
Auckland	21%
Christchurch	14%
Wellington (region)	24%

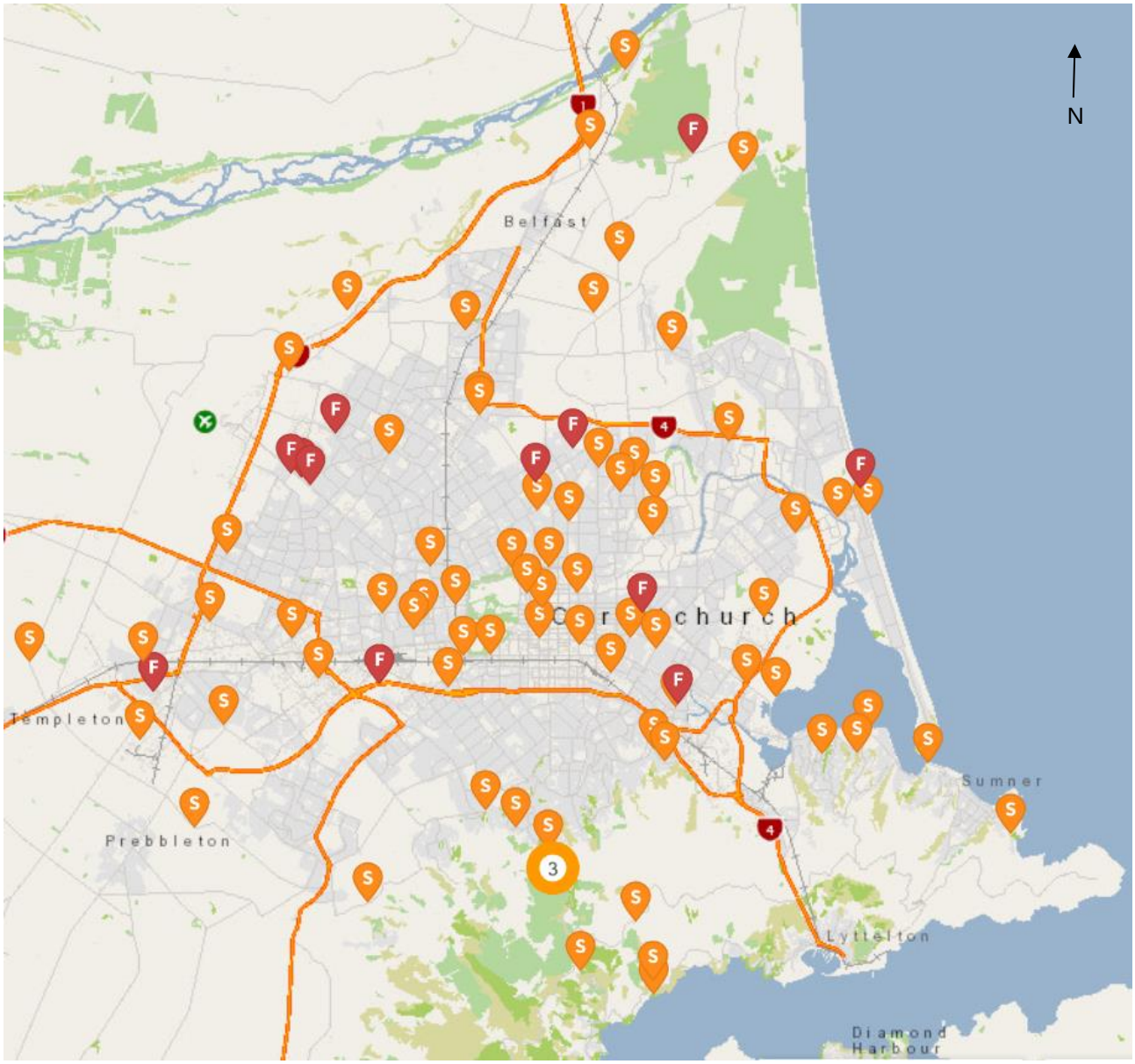
Table 4 shows that Christchurch is performing better than both Auckland and Wellington in relation to the proportion of fatal and/or serious injury crashes where travel speed has been identified as a contributing factor. However, travel speed still contributes to 14 percent or 92 fatal and/or serious injury crashes and has been identified as a high risk area for Christchurch City.

The location of fatal and/or serious injury crashes in Christchurch where travel speed has been identified as a contributing factor is shown in Figure 8 for the five year period 01 July 2013 to 30 June 2018.

[10] Note analysis in Table 3 excludes the State Highway network

[11] Note analysis in Table 4 excludes the State Highway network

Figure 8 Fatal and Serious Injury Crashes due to Travel Speed (01 July 2013 to 30 June 2018 Local Road Network)[9]



Safety for Pedestrians and Cyclists

Vulnerable road users such as pedestrians and cyclists are over represented in crash statistics in Christchurch, proportional to mode share. In the five year period between 01 July 2013 to 30 June 2018, 34 percent of death and/or serious injury crashes involved pedestrians and/or cyclists (155 cyclists and 132 pedestrians). The combined mode share of walking/jogging and cycling for journeys to work at the last census (2013) was 12 percent, this demonstrates how active modes are over represented in crash statistics in Christchurch[12].

The NZ Transport Agency Crash Analysis System has been used to analyse fatal and serious injury crashes involving pedestrians and/or cyclists, to compare Christchurch statistics against data from Auckland and

[12] Census 2013, Statistics New Zealand

Wellington. Over the five year period 01 July 2013 to 30 June 2018, in Christchurch there were a total of 253 fatal and/or serious injury crashes involving pedestrians and/or cyclists (local road network), accounting for 38 percent of all fatal and/or serious injury crashes. In comparison, over the same time period 31 percent of fatal and/or serious injury crashes in Auckland and 38 percent in the Wellington region identified travel speed as a contributing factor as summarised in Table 5.

Table 5 Fatal and/or Serious Injury Crashes Involving a Pedestrian or Cyclist, New Zealand Cities[13]

City	Proportion of Fatal and/or Serious Injury Crashes Involving a Pedestrian or Cyclist	Active Mode Share (Census 2013)
Auckland	31%	6.2%
Christchurch	38%	12%
Wellington (region)	38%	15%

Table 5 shows that active modes are over represented in fatal and/or serious injury crash statistics for all of the cities analysed. The location of fatal/and or serious injury crashes in Christchurch involving a pedestrian or cyclist is shown in Figure 9 for the five year period 01 July 2013 to 30 June 2018.

Customer Insights

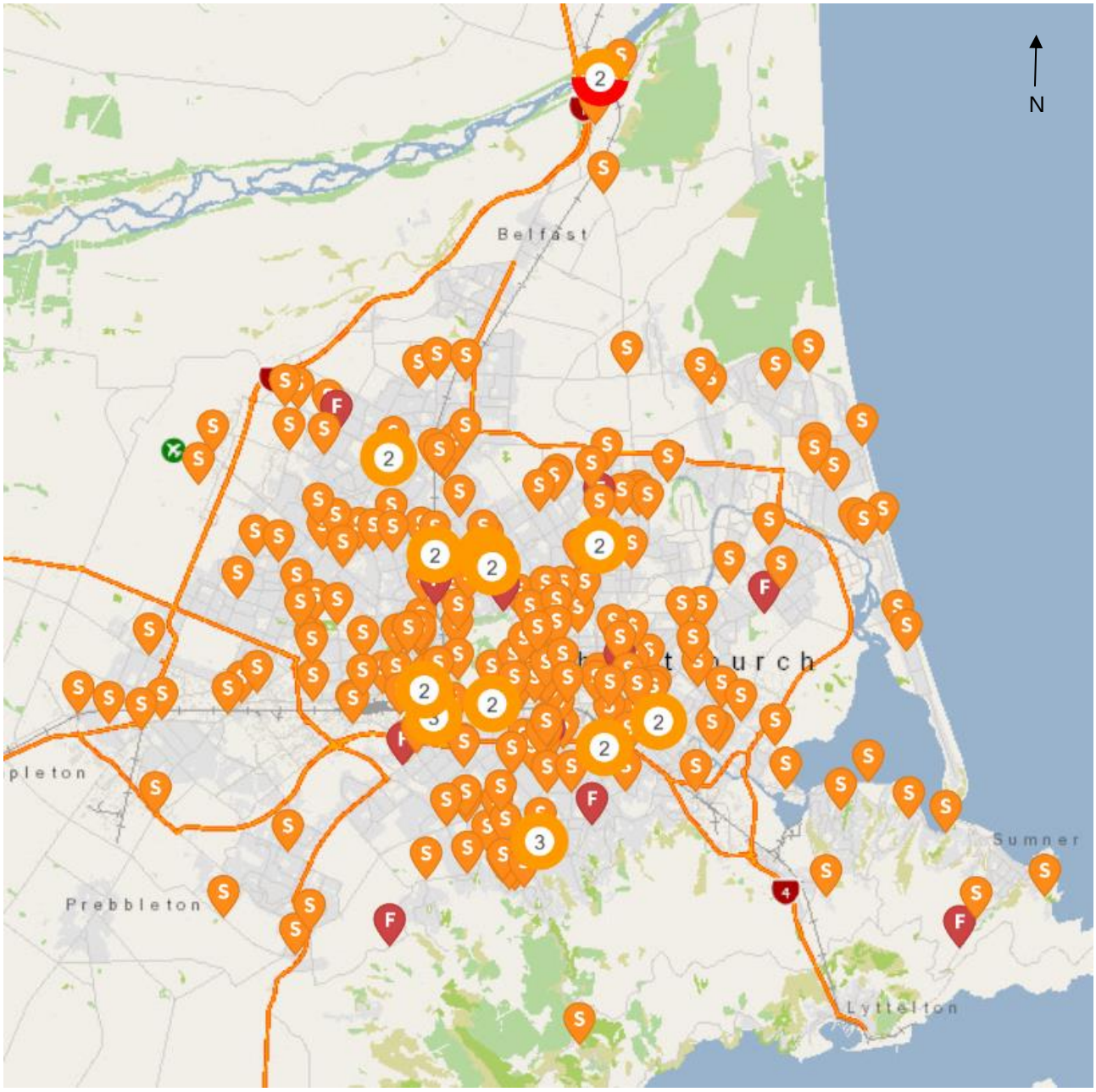
Customer insights from the 2018 Life in Christchurch transport survey suggest that only 33 percent of respondents feel safe when cycling in Christchurch, compared to 51 percent for walking activities, 64 percent when travelling by car and 78 percent when travelling by public transport[14].

Whilst safety is a key concern for the Council, the survey results do indicate improvements from the previous Life in Christchurch survey and suggests that people are becoming more comfortable and confident when cycling around the city. Christchurch has a strong uptake of active modes, aided by its flat landscape. To encourage more people to cycle, 13 Major Cycle Routes are being developed to link shopping centres, key activity centres, businesses, schools, parks and popular recreation destinations. Investment in the Major Cycle Routes helps address perceived and actual safety risks for cyclists and has broader benefits such as healthier people, improved connectivity, reduced congestion and reduced deterioration of roading assets.

[13] Note analysis in Table 4 excludes the State Highway network

[14] Christchurch City Council, Life in Christchurch Transport Survey, 2018

Figure 9 Fatal and Serious Injury Crashes Involving Active Modes (2012-2017 Local Road Network)[9]



Overall, the estimated social cost of crashes/injuries in Christchurch City was $275 million in 2017[15]. The social cost includes all costs (including non-financial cost) incurred as a result of a crash/injury, irrespective of when the cost is incurred and who pays. The total social cost is based on accident year and includes the estimated cost of loss of life and life quality, loss of output, medical cost, property damage costs and legal and court costs. All on-going costs are incorporated in the social cost estimates. In other words, the social cost is a measure of the true costs of road crashes and injuries.

[15] www.ccc.govt.nz/the-council/how-the-council-works/20182028-vision/community-outcomes/liveable-city/a-well-connected-and-accessible-city/

3.2.3 Problem Statement Three – Modal Choice and Public Transport

The current public transport system in Christchurch is considered unreliable and not competitive with the private car which reduces the uptake of public transport, results in a poor customer experience and impacts liveability outcomes.

The current public transport system in Christchurch is considered unreliable due to lengthy journey times in comparison to private vehicles. It is also regarded as a poorly connected network that does not provide good accessibility to employment, education and key services. To address these issues a separate Public Transport Futures Programme Business Case (PBC) was drafted in mid-2018.

The PBC recommends that both the provision of public transport services and the perception of public transport in Christchurch need to change. A summary of the key evidence from the PBC is provided below, further evidence and commentary is provided in the full PBC report that was endorsed by the NZ Transport Agency in June 2019. Three problem statements were developed for the PBC:

- The current public transport system can be unreliable, and many journey times are not competitive with the private car. (50%)
- The current public transport system is not always sufficiently integrated with existing and planned land use in Greater Christchurch. (25%)
- There is poor perception and experience of using public transport in Greater Christchurch. (25%)

The current reliability of inbound bus services is between 70-90 percent. Reliability increases where buses are given priority over other vehicles using the road. The maximum demands on any corridor occur near the Christchurch City area due to greater congestion, lack of priority bus lanes and increasing numbers of road users converging during peak demand.

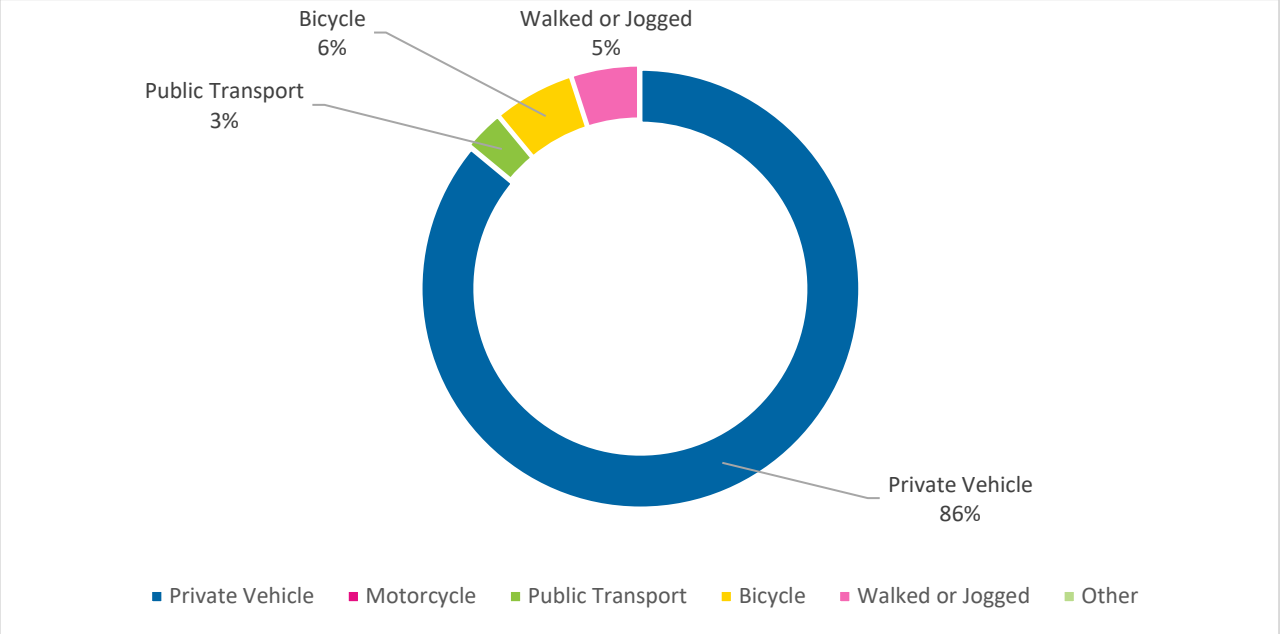
Customers' travel needs also influence perceptions of public transport reliability. For example, a person with multiple trips during the day and time constraints is likely to perceive public transport as less reliable, compared with a private car. Conversely, a person travelling directly from home to a place of work may find public transport easy and reliable. Investment in Greater Christchurch's public transport network has been the subject of extensive discussion and research during the last 20 years.

The post-quake environment provided a significant opportunity to confirm the future public transport network, revisit long-term requirements and provide for long-term settlement patterns.

Existing investment in the strategic transport network (Roads of National Significant and Christchurch Northern Corridor) and the completion of current projects will support journey time improvements and reliability in the short term. However, these investments are focused on improving private car journeys. Christchurch Transportation Model (CTM) modelling indicates that the projected population growth will negatively impact the transport network unless investments are made to balance the transport system. Therefore, significant investment is needed in larger scale projects to meet demand for future growth and support a mode share increase for public transport.

Without investment to support changes in travel behaviour and mode choice, the projected growth will place significant pressure on the transport network. The potential effects will be most severe for trips from Selwyn, Waimakariri and western Christchurch into the central city. The current mode share for journey to work in Greater Christchurch is shown in Figure 10. Data from Census 2013 shows that 86 percent of journeys to work were made by private vehicles.

Figure 10 Journey to Work Mode Share in Greater Christchurch[16]



The reliance on the private vehicle is gradually worsening, with a comparison between 2006 and 2013 Census figures indicating that private vehicle mode share increased from 84 percent of all journeys to work in 2006 to 86 percent in 2013. International research into car dependency has identified that high levels of per capita private vehicle travel increase costs to society, including high vehicle expenses, reduced travel choices, due to a lack of viable public transport options, increased road and parking facility costs, congestion, increased risk of injury and impacts to the environment. High levels of private vehicle dependency has also been shown to impact economic productivity and regeneration.

Table 6 shows the main means of commuting to work in the main New Zealand cities in 2013. Public transport as a means of transport to work ranged from 20% in Wellington to only 3% in Christchurch. Using a motor vehicle was the most common method of getting to work in all three cities.

Table 6 Main Means of Commuting to Work on Census Day, Census 2013

	Auckland	Wellington	Christchurch
Motor Vehicle[17]	435,789 (84%)	45,711 (53%)	116,382 (84%)
Walked or Jogged	26,529 (5%)	18,183 (21%)	6,396 (5%)
Bicycle	6,342 (1.2%)	3,729 (4.3%)	9,801 (7%)
Train or Bus	43,395 (8%)	17,709 (20%)	5,199 (3%)
Other	7,989 (2%)	1,353 (2%)	1,383 (1%)

[16] Census 2013, Statistics New Zealand.

[17] Includes as a driver or passenger and includes motorcycle

Air pollution from all sources in New Zealand is responsible for 1,222 deaths per year; 900 premature deaths are attributed to human sources. Emissions from vehicles cause 256 premature deaths, with annual costs of $495 million, each year[18]. Public transport has a key role to play in reducing total emissions and effects of car-based commuting. People who live or work in communities with high quality public transport tend to drive less and rely more on alternative modes (walking, cycling and public transport).

The health and wellbeing benefits of active travel modes such as walking or cycling are well established. There is also growing evidence demonstrating the detrimental impact that commuting by private car can have on population health and wellbeing. This includes impacts on mental wellbeing, physiological measures (such as increased blood pressure), or the time available for activities.

The emissions released by motor vehicles are harmful to the environment and human health, particularly in areas where there are high traffic and congestion rates. Motor vehicles produce a complex mixture of contaminants including particulate matter and nitrogen oxides. Both are regularly measured as part of monitoring the New Zealand air shed. Busy roads are key sources of air pollutants that can affect motorists as well as nearby residents and employees. Motor vehicles contribute 14 percent of PM10 pollution in Christchurch[19].

Sustainability benefits are closely aligned to wider health benefits. In addition, by increasing public transport mode share, emission increases may be avoided particularly with the adoption of electric vehicles. As higher rates of public transport patronage are realised, reductions in emissions and fuel consumption will also be achieved. This supports New Zealand's policies on reducing greenhouse emissions.

Public transport can also contribute to safer streets as part of wider land and transport planning approaches. An Accessible City is implementing a transport system in the central city based on a compact, people-friendly core with a key focus on providing for public transport, walking and cycling. These forms of transport are inherently safer than the private car which results in fewer crashes. Moving people by bus also improves safety, lowering the overall crash risk per person per kilometre travelled. Public transport can encourage and enable increased employment in key activity centres and the Christchurch central city.

3.2.4 Summary of the Problem Statements

The review of available evidence for each of the problem statements demonstrates a strong case for accelerated investment due to the scale and significance of the problems identified. This section has demonstrated that addressing the problems identified requires immediate investment and commitment from multiple parties, most notably the Council and the Crown.

This investment case is seeking investment from the CRAF to help address these critical transport challenges and enable the city to continue to transition from recovery to regeneration, improving liveability outcomes for residents and visitors in a timely manner.

The regeneration of Christchurch's transport systems and road network are integral to the wider vision for Greater Christchurch of providing a vibrant centre that supports regional economic activity and employment.

The CRAF investment in roading and transport improvements provides greater certainty to residents and businesses. It is targeted to areas of the city where the transport constraints and challenges identified are impacting on the wellbeing and quality of life of Christchurch residents. It also demonstrates tangible progress towards Christchurch's ongoing recovery and regeneration.

[18] Op. cit.

[19] The State of Air Quality in New Zealand: www.pce.parliament.nz/media/1256/the-state-of-air-quality-in-new-zealand-web5.pdf

3.3 The Objectives, Scope and Strategic Fit

3.3.1 Investment Objectives

Drawing on the current context and the case for change outlined above, three objectives have been developed to underpin this investment case.

1. To improve liveability and support the ongoing regeneration of Christchurch;
2. To reduce transport fatalities and serious injury crashes; and
3. To improve journey time and reliability of public transport services to increase patronage.

3.3.2 Existing Arrangements and Business Needs

The rationale for the investment objectives along with their potential scope is outlined in the following tables.

Table 7 Investment Objective One

Regeneration: To improve liveability and support the ongoing regeneration of Christchurch	
Existing Arrangements	The transport system in a number of Christchurch communities provides a much lower level of service than other New Zealand cities. This is primarily due to poor quality streets with many pavements and roads damaged as a result of the earthquakes, others have only had patchwork repairs. This contributes to lower levels of modal choice (in particular pedestrian footfall and cycling), increases personal and collective safety risks within these areas and impacts community cohesion and social wellbeing. In 2018 Council increased the level of funding to $9m in the first three years of the LTP to address poor condition roads.
Business Needs	As the local road controlling authority Council owns, plans and manages approximately 3,000 km of local roading network. There is a clear need to improve levels of service on parts of the Christchurch transport system to respond to resident concerns and achieve wider regeneration and liveability outcomes.
Potential Scope	Five areas have been identified for CRAF investment to address the geographical areas where key safety and accessibility issues have been identified alongside the areas of lowest asset condition across the city following earthquake damage. This approach will allow for key safety and accessibility improvements to be made at the same time as addressing asset condition issues such as drainage concerns and footpath repairs.
Potential Benefits	A safer and more accessible transport network that supports the ongoing regeneration of Christchurch, whilst improving quality of life for local residents.
Potential Risks	▪ Loss of trust and reputation: Residents have repeatedly called for greater focus on roading and transport improvements in recent public consultation. ▪ Delays: Further delays to implement improvements could result in reduced business confidence and impact wider economic and social indicators.
Key Dependencies	▪ Public consultation for major improvement projects.

Table 8 Investment Objective Two

Safety: To reduce transport fatalities and serious injury crashes	
Existing Arrangements	Between July 2012 and June 2017 there were a total of 847 crashes that resulted in death or serious injury, this included 53 crashes resulting in deaths. Key risk areas for Christchurch are: ▪ Safety for all road users at intersections; ▪ Speed when driving; ▪ Safety for pedestrians and cyclists, and ▪ Safety for motorcyclists. Council works closely with other agencies to deliver a programme of work to improve road safety outcomes. Council proposes to invest $26 million in road safety activities over the 10-year LTP period (2018-2028).
Business Needs	Despite reductions over recent years in the number of people killed and seriously injured on Christchurch roads, further work is needed to target areas of high risk, particularly intersections, vulnerable users (cyclists and pedestrians), education and driver distraction.
Potential Scope	Eight road safety themes have been prioritised for CRAF investment: ▪ Vision zero safe system treatments at the highest risk intersections; ▪ Construction of signalised crossings; ▪ Red light running enforcement cameras at intersections; ▪ Speed management treatments on high risk (excess speed) corridors; ▪ Signalised intersection safety improvement sites, ▪ Installation of intersection ramps to reduce vehicle speeds; ▪ Minor safety improvements; and ▪ Minor safety improvements that are led and promoted by Community Boards.
Potential Benefits	To reduce the number of casualties on the road network and reduce the social cost of crashes to the wider community.
Potential Risks	▪ Balancing the needs of all road users through safety improvements.
Key Dependencies	▪ Coordination with safety improvements on the State Highway network. ▪ Builds on related initiatives that the Transport Agency and Council already have in place, such as the Safe Networks Programme. ▪ Integration with wider roading and transport improvement projects.

Table 9 Investment Objective Three

Access: To improve journey time and reliability of public transport services to increase patronage	
Existing Arrangements	The current public transport system in Christchurch is considered unreliable due to lengthy journey times by bus in comparison to private vehicles. It is also regarded as a poorly connected network that does not provide good accessibility to employment, education and services. Public transport services are managed by Environment Canterbury. Council is responsible for bus stops and bus priority.
Business Needs	Public transport patronage remains below pre-earthquake levels, although is steadily increasing. Like many cities, private vehicles are the dominant mode of transport in Greater Christchurch with 84% of people driving to work. This level of private vehicle reliance has resulted in impacts on the transport network, including congestion and delays on key corridors. Unless steps are taken to invest in alternative modes and reduce reliance on private vehicles, increased travel demand during the next 10 years will exacerbate peak time congestion and generate impacts on the environment, health, and safety.
Potential Scope	A separate investment case is being progressed to determine the public transport routes that should be prioritised for improvements. CRAF investment will be confirmed upon completion of the Public Transport Foundations Business Case and would likely be used to fund public transport improvements such as bus lanes and bus gates at intersections and the approaches to intersections to improve bus travel times and overall trip reliability.
Potential Benefits	A more reliable and accessible transport network that supports the ongoing growth and regeneration of Christchurch, whilst improving quality of life for local residents.
Potential Risks	▪ Integration with parallel roading and transport improvement projects. ▪ Collaboration with wider investment partners including Environment Canterbury to identify infrastructure and operational improvements to public transport services in Christchurch.
Key Dependencies	▪ Supports related initiatives identified in the Greater Christchurch Public Transport Programme Business Case. ▪ Requires support and participation from Environment Canterbury to identify further service improvements (such as increased bus frequencies).

3.3.4 Strategic Fit

This section outlines the transport, economic and planning context within Christchurch, together with the specific transport constraints and challenges facing the city.

The proposed CRAF roading and transport investment has been carefully developed to meet a range of economic, social and environmental objectives. These objectives have been developed to closely align with national and regional strategic priorities, including the Government Policy Statement for Land Transport, the Canterbury Regional Land Transport Plan and the Christchurch Transport Strategic Plan. This close fit means that CRAF investment will complement schemes and projects already outlined by the key investment partners and wider stakeholders across Christchurch, Canterbury and New Zealand.

The current strategic direction of the government for land transport investment is summarised in the Government Policy Statement on Land Transport 2018-21 (GPS). The key strategic priorities outlined in the GPS 2018-21 relate to safety and access, while supporting strategic priorities include value for money and the environment. The CRAF investment objectives include a focus on safety, access, the environment and place-making, and align well with the GPS strategic priorities.

Table 10 Alignment to Key Strategies and Organisational Goals

Strategy	Organisation	Areas of Alignment with Investment Objectives
Government Policy Statement on Land Transport 2018- 21	Central Government	The GPS 2018 defines safety and access as key priorities. The objectives of these priority areas are a land transport system that: ▪ Is a safe system, free of death and serious injury; ▪ Provides increased access to economic and social opportunities; ▪ Enables transport choice and access; and ▪ Is resilient. Supporting priorities are the environment and value for money. The CRAF roading and transport improvements have strong alignment to these areas.
Canterbury Regional Land Transport Plan 2015 - 2025 (revised June 2018)	Environment Canterbury Regional Council	The Canterbury Regional Land Transport Plan outlines the current state of the Canterbury regional transportation network and the challenges it faces now and in the future. The document outlines the key programmes and projects to respond to these challenges. These programmes seek outcomes similar to those reflected in this investment case of: ▪ Safety - improving road safety for all users; ▪ Accessibility - providing attractive transport choices; ▪ Condition and suitability of assets; ▪ Travel time reliability - managing traffic growth; ▪ Resilience - network security and earthquake recovery; and ▪ Environmental impact - the transport system has implications for the population's health[20].

[20] Environment Canterbury Regional Council, Canterbury Regional Land Transport Plan, June 2018.

Strategy	Organisation	Areas of Alignment with Investment Objectives
Canterbury Regional Public Transport Plan 2018-2028	Environment Canterbury	The Regional Public Transport Plan contains a number of outcomes, objectives, policies and actions that will be delivered over the next three to ten years. The document identifies five priorities: ▪ Improving the environment; ▪ Growing patronage; ▪ Improving affordability; ▪ Enabling innovation; and ▪ Improving accessibility.
Christchurch Transport Strategic Plan 2012-2042	Christchurch City Council	The Christchurch Transport Strategic Plan 2012–2042 outlines a 30-year vision for transport within the city. A key goal is to improve access and choice of travel options. The proposed CRAF roading and transport improvement investment will contribute to a number of the Plan's objectives including: ▪ Objective 1.3: Encourage people to use a wider range of travel options; ▪ Objective 2.1: Support recovery; ▪ Objective 2.3: Safe systems and safer speeds; and ▪ Objective 4.1: Reduce emissions and invest in green infrastructure and environmental enhancement.
An Accessible City 2012	Canterbury Earthquake Recovery Authority	The Christchurch Central Recovery Plan was approved on 30 July 2012. The An Accessible City chapter of the Recovery Plan details a plan to provide a compact, people-friendly core to support the recovery and regeneration of the central city. The aim is to provide a transport system that meets the current and future needs of all inner city travellers across a range of modes.

The Council's vision for transport is to keep Christchurch moving forward by providing transport choices to connect people and places (Christchurch Transport Strategic Plan, 2012-2041). The goals for the transport system are to:

- Improve convenience and connectivity of walking, cycling and public transport to increase their use (in preference to single occupancy vehicles);
- Improve journey time reliability on key corridors; and
- Reduce transport fatalities and serious injuries.

These goals primarily help to deliver the community outcome of a well-connected and accessible city and the strategic priority of increasing active, public and shared transport use.

The partner agencies responsible for the operation and management of the transport system in Christchurch have been working together to review the transport issues and opportunities and to provide transport solutions for people and businesses in Greater Christchurch. From a wide range of issues an integrated approach has been taken to develop preferred options. This has been done through a series of investment cases, prepared both city-wide, for the central city and for some leading transport modes.

Each one has involved comprehensive stakeholder engagement workshops. These have led to an agreement on a recommended transport programme of activities for the Council, in partnership with wider Greater Christchurch Partnership members from New Zealand Transport Agency, Selwyn District Council, Waimakariri District Council, Environment Canterbury and KiwiRail.

The key transport issues facing Christchurch over the next 30 years as agreed by the transport agencies are:

- **Connectivity and accessibility**: the prevalence of private cars and inconvenience of bus travel and the perceived safety issues of cycling on public roads means it is difficult to get more people to walk, cycle or use the bus.
- **Reliability**: People in Christchurch remain dependent on their cars, with the last census finding that 84% of journeys to work were taken by private vehicle. The reliance on the private car is constraining the ability of the transport system to move people and goods efficiently and is resulting in congestion, low corridor productivity and poor journey time reliability for all modes.
- **Safety:** Despite reductions over recent years in the number of people killed and seriously injured on Christchurch roads, further work is needed to target areas of high risk, particularly intersections, vulnerable users (cyclists and pedestrians), education and driver distraction.
- **Road asset condition:** Stronger Christchurch Infrastructure Rebuild Team (SCIRT) has completed a significant repair programme to address the major earthquake damage to the transport system. However, not all damage was repaired and there remains issues with maintaining the condition of the network and corresponding levels of service. There are an increased number of roads requiring maintenance, renewal and replacement. If this is not planned for, asset condition levels of service will remain below the New Zealand average, and safety and accessibility outcomes will be compromised.

The assessment of relevant strategies, plans and policies concludes that the investment proposal and objectives set out in this investment case are consistent with the priorities set out in key national, regional and local documents. Many of the proposed roading and transport improvements will result in direct contributions towards the outcomes sought in these strategic documents.

3.4 The Benefits of Investment

Stakeholders identified the following benefits at the facilitated workshop:

Meeting demands driven by population growth

Christchurch has already surpassed its pre-earthquake population numbers, however despite the extensive works undertaken by SCIRT the level of service offered by the transport network remains below pre-earthquake levels. A growing population will continue to put pressure on the road network at a rate which will become unsustainable. Addressing transport infrastructure issues now, particularly in high growth and high density areas will relieve future pressure on the transport network.

Addressing key safety issues and reduce the risk of crashes

Road safety remains one the key priorities of the Christchurch City Council. A timely response in addressing safety issues at key problem intersections and the provision of wider and safer footpaths and cycleways will reduce the risk of crashes, improve the wellbeing of the community and assist with a greater uptake of active and public transport alternatives.

Adapting to changing land use

Disruptions caused by the earthquakes saw a large migration of people and businesses to outer western suburbs. This dynamic shift in population and employment destinations led to changing travel patterns. This caused a disconnect between the pre-earthquake road and public transport network and the current land uses. In order to adapt to these changes and also to remain flexible for future land use changes, a proactive response is required to meet current and future transport needs.

Meeting pre-earthquake levels of Public Transport use

Prior to the 2010/11 earthquakes public transport patronage was increasing with an average rate of six percent per year and was projected to continue this growth with a target of 30 million bus boarding's by 2020. Current bus patronage numbers are less than half of this with recent statistics showing a slight fall in patronage numbers within the last three years. This delay in uptake remains a critical concern, particularly as an increase in population will only increase cars and traffic on the roads, reducing travel times (for cars and buses) and exacerbating the high dependency on private vehicles.

Improve satisfaction and wellbeing of the community

Feedback from the Life in Christchurch 2018 Transport Survey showed that the condition and quality of our roads remains a frustration for respondents, and is frequently identified as an issue that makes travel by all modes difficult. Responding to some of the more pressing issues, as identified by the community, will result in reduced driver frustrations and subsequently improve the mental health and wellbeing of residents. Continued dissatisfaction could have severe negative impacts to not only the wellbeing of the citizens but also the growth and regeneration of key urban centres.

Accelerated funding for other priority projects

The proposed accelerated funding would also free up Council funding for other priority infrastructure including the maintenance and renewal of water and wastewater infrastructure, improvements to parks, riverbanks and open spaces and the construction of new community facilities as outlined within the LTP.

An assessment of how the CRAF roading and transport improvements delivers against specific transport objectives is set out in Table 11.

Table 11 How CRAF Investment Delivers Against Transport Measures of Success

Key output / measure of success	How CRAF investment meets requirement
A more active and sustainable transport system which encourages walking, cycling, public transport and carpooling.	CRAF investment in the five areas will encourage more sustainable 'first and last mile' connections through: ▪ Attractive cycle and pedestrian infrastructure; and ▪ A safer local road network. Which will act as a catalyst to: ▪ Extend the lifecycle of assets, reducing operating costs; ▪ Encourage mode shift that will enable continued growth; ▪ Improve liveability and quality of life outcomes; ▪ Reduce carbon impact of transport; and ▪ Provide connectivity and accessibility between residential areas and local activity centres.
Improving the condition of assets to enable the ongoing regeneration and growth of the city and wider region.	CRAF will improve the condition of assets in the five areas, which have been identified as the number one issue for Christchurch residents in the recent Life in Christchurch annual transport survey.
Delivering safer roads and roadsides, with a reduction in death, serious injury and minor injury crashes to contribute towards the goal of 'Vision Zero'.	CRAF will seek to achieve reductions in the number of people killed and seriously injured on Christchurch roads, particularly at intersections, involving vulnerable users (pedestrians and cyclists) and as a result of excess speed. This will be achieved through targeted safety improvements at high risk sites across the city.
Delivering high quality, high frequency, reliable public transport services, making public transport the mode of choice and reducing the reliance on single occupant private vehicles.	CRAF will act as a catalyst to help to: ▪ Provide a step-change in the quality and reliability of public transport within the city; ▪ Encourage modal shift through improved reliability; and ▪ Reduce reliance on single occupant car trips, for example by improving public transport journey times between where people live and central city employment areas.

4. The Economic Case

This chapter sets out the Economic Case for the proposed CRAF roading and transport improvements. The purpose is to provide an assessment of whether the investment represents value for money.

4.1 Critical Success Factors

Council has adopted an evidence based approach to determine the priority areas for investment, identify what responses are required and how these will be implemented, based on critical success factors summarised in Table 12.

Table 12 Critical Success Factors

Critical Success Factor	Description
Strategic fit & business needs	▪ Meets the agreed investment objective and related business needs. ▪ Is aligned with the strategic directions of the government, including the NZ Transport Agency. ▪ Is aligned with regional planning and regional priorities. ▪ Responds to Council's strategic priorities and community outcomes. ▪ Delivery of a safe, connected and accessible transport system. ▪ Provides a positive customer experience, that improves liveability and provides greater certainty for wider investment (supports regeneration). ▪ Is integrated with other strategies, programmes and projects.
Potential value for money	▪ Prioritisation of roading and transport improvements and value for money is optimised, for example if investment results in improved outcomes against indicators such as reduced serious and fatal crashes and improved public transport reliability and patronage, that wouldn't be achieved without the investment, then the investment should be considered as value for money.
Potential affordability	▪ Council has access to capital to meet the delivery costs and can continue to fund ongoing maintenance and any operational costs. ▪ Investment does not displace other Council investment priorities. Council will continue to invest in Business As Usual activities.
Potential achievability	▪ Projects can be completed within the proposed timeframe with current resources and external support. ▪ Council will continue to engage with the community through the process and build on existing engagement activities such as the LTP process. ▪ Contractors are available to commence works on the identified roading and transport improvement projects (following detailed design phase).

4.2 Option Development and Assessment

4.2.1 Options Identification

As part of the identification and development of a 'recommended option' it is necessary to identify a longer list of potential options. A set of programme options were developed by the project team compiling sets of alternatives in differing areas of focus that align with the Council priorities detailed above. These range from 'Do Minimum/Planned Investments' through to programmes promoting community access, safety, public transport and asset condition improvements.

The programmes deliberately focus investment in different areas to demonstrate that the problems could be addressed in multiple ways and to promote constructive feedback from stakeholders in relation to the achievement of investment objectives. The project team has identified a list of in-scope options outlined below.

4.2.1.1 The Status Quo or Do-Nothing Option

Description

The Base Case is typically where investors would look to work with the existing infrastructure to prolong its life where feasible, with targeted additional investment. In most investment cases, the Base Case is the 'status quo' or 'do nothing' option. While the Base Case is presented in this investment case as the counterfactual, because the roading and transport improvements for Christchurch are critical, it represents a 'do minimum' approach rather than a 'do nothing' approach. Where possible, the Base Case is designed to minimise capital expenditure and utilise existing infrastructure and/or locations.

In this investment case the Base Case involves a scenario in which the roading and transport improvements identified in the 2018-2028 LTP are implemented based on current timeframes. This would result in improvements being delivered over a protracted 10-30 year timeframe, instead of the proposal to use CRAF investment to accelerate the delivery of these projects over the next 3-5 years.

Advantages

Should the CRAF investment not be realised then the proposed improvement projects will be delivered over the next 10-30 years and will be limited to current Council funding planned in the LTP. It is likely that the objectives would eventually be realised; however, not in a timely manner.

Disadvantages

The main disadvantages are that is will prolong the recovery of the transport system and likely impact on liveability and regeneration outcomes. This option is also likely to result in increased operational costs as Council will need to respond to an increased amount of maintenance requests as assets continue to fail.

Public transport and safety improvements would also not be delivered in a timely manner that would increase the risk to all road users and further exacerbate the reliance on the single occupant private car.

Conclusion

This option would result in delayed implementation of critical roading and transport improvements and risk the ongoing regeneration of the city. It also has a reputational risk to the Crown and Council as there is a public expectation that the CRAF roading and transport investment will accelerate the delivery of critical transport improvement projects.

4.2.1.2 The CRAF Option

Description

This option proposes to invest the proposed CRAF funding, to accelerate the delivery of roading and transport improvements, targeting the areas of highest priority, based on the strategic priorities identified in the LTP, as well as wider plans, strategies and previous investment cases.

To ensure the best possible returns from transport investments Council has investigated options to substantially increase or bring forward investment to help shift to a greater focus on improving travel choice and road safety, which is expected to deliver a step-change in the performance of the transport system.

Achieving best value for money requires identifying the right solution in the right part of the network at the right time. This means that investments should recognise the strengths and challenges of each part of the network. In accordance with the LTP and to address the key challenges agreed in previous plans, strategies and investment cases, Council is proposing to prioritise CRAF Roading and Transport investment as follows:

- Five area based treatments: access, safety and asset condition improvements for people, goods and services to improve levels of service in five areas of the city that post-earthquake still have identifiable access, safety and asset damage that is impacting liveability and regeneration outcomes.
- Road safety: treatments to reduce collective and personal risk as well as the number and severity of crashes on the Christchurch transport network. Aligned with the Council's Road Safety Action Plan, this programme of work prioritises investment in safety on the highest risk locations across the city.
- Public transport: improve access and travel time reliability by public transport to concentrated activity centres (e.g. the city centre, major employment areas) to reduce the reliance on the private vehicle (a stand-alone business case is being developed to determine the priority for this portion of CRAF investment).

Advantages

The proposed CRAF roading and transport investment has the potential to deliver the improvements in transport access, reliability, safety and asset condition required to achieve the city's economic growth, liveability and regeneration objectives. CRAF will also ensure these benefits are delivered in an accelerated timeframe, providing value for money by reducing the cost of addressing asset value, the social cost of crashes and the impacts of poor travel choice and accessibility constraints.

Disadvantages

The main disadvantages are that despite the proposed CRAF investment, there will still be areas of the city that require roading and transport improvements. These improvements will be delivered as part of Council's business as usual programme, as and when funding allows.

Conclusion

This option would enable the acceleration of critical roading and transport improvements and target investment to the area's most in need.

4.3 The Recommended Option

The CRAF option is the only viable option to accelerate the delivery of critical transport improvement projects. The recommended option includes investment in safety programmes, walking and cycling and public transport improvements.

4.3.1 Investment in Five Areas

The framework for identifying priority projects for CRAF investment in the five areas is set out under heading *2.2.1.1 Area Based Approach*. As detailed in the 'Report Cards' (**Appendix C**) a total of $25-30m has been identified from the CRAF to fund the accelerated delivery of critical access, safety and asset condition improvements in the five areas.

The CRAF investment in the five areas will result in 138 streets benefiting from roading and transport improvements. It will address corridors where collectively 268 crashes have occurred, including 1 fatal crash, 24 serious injury crashes, 101 minor injury crashes and 142 non-injury crashes. The types of treatments proposed vary on a street by street basis depending on the particular challenges and constraints identified. Further work is required through the detailed design phase to identify the individual treatments and proposed for each location, however, as an example the type of interventions proposed include:

- Footpath improvements, including widening, additional crossing points, dropped kerbs, tactile paving, wayfinding signage and street lighting improvements.
- Slow speed treatments, including traffic calming measures, speed limit reductions, speed limit signage, parking management, line markings and Variable Message Signs.
- Access improvements, including shared paths (walking and cycling), cycle sharrow road markings, cycle signage, wayfinding signage and cycle parking.
- Asset condition, including kerb to kerb rebuilds, road narrowing, footpath and carriageway resurfacing to improve safety and accessibility outcomes.

Quick Wins

The CRAF investment is rightly focused on safety and access improvement projects that will act as a catalyst for the ongoing recovery and regeneration of the city. But there are clear benefits to some relatively small safety and access interventions that can be delivered quickly.

The CRAF will improve the transport network in each of the five areas over the next 3-5 years. Making the transport system safer, more accessible and improving asset condition will support the ongoing regeneration of the city.

However, while these works are planned, scoped and developed, the people using the transport system in these communities still expect to see improvements. For this reason the investment case has identified a number of 'quick wins' to advance the implementation of safety and access improvements within the five areas. These 'quick wins' can be made relatively quickly and easily, and longer-term improvement plans will benefit from demonstrating early success.

Council defines 'quick wins' as strong candidates for prioritisation. These are projects that can deliver real economic, social and environmental benefits to residents in a short period of time. The 'quick wins' identified represent low cost and low risk improvements that can be made to improve access and safety outcomes. In many case the 'quick wins' solution may be all that is required to address the constraints and challenges identified. In other cases, the 'quick wins' provide a level of improvement, prior to more significant investment required at a later stages.

The ‘quick wins’ have been developed to deliver accelerated improvements in the five areas to address safety and access issues. Examples of the types of interventions proposed as part of the ‘quick wins’ programme are summarised in Table 13. These are not the only potential interventions, but they are all examples that meet the low cost and low risk criteria and show what the CRAF investment can do to improve the transport network in these five areas in the immediate future.

Table 13 Example of Quick Win Interventions

Examples of ‘Quick Win’ Interventions	
▪ Safe and appropriate speeds/speed management	▪ School zones (slower speeds)
▪ Skid resistance surfacing	▪ Bicycle facilities (bike parking)
▪ Line markings	▪ Line markings
▪ Active signs	▪ Traffic signal priority
▪ Raised safety platforms/traffic calming	▪ Waiting facilities (bus shelters)
▪ Mid-block crossings	▪ Footpath surfacing
▪ Tactile paving	▪ Shoulder surfacing
▪ Street lighting	▪ Dropped kerb crossing
▪ Sight distance (obstruction removal)	▪ Mid-block crossings

Following the implementation of the ‘quick wins’ Council proposes to direct the remaining CRAF investment towards the delivery of more comprehensive improvements within the five areas. The comprehensive interventions include measures such as full kerb to kerb rebuilds, intersection improvements and road narrowing to deliver the safety and access improvements these areas need.

A list of the specific streets proposed for CRAF investment within the five areas is provided within the ‘Report Cards (**Appendix C**). The recommended programme is graphically displayed in Figures 11 to 15. These maps demonstrate the number of corridors proposed for roading and transport improvements either as a ‘Quick Win’ project or a more comprehensive improvement as a result of the accelerated delivery made possible by the CRAF investment.

The streets are indicative of what the CRAF investment could achieve, but may be subject to change, depending on conditions at the time of delivery.

Figure 11 Linwood-Woolston Indicative Programme

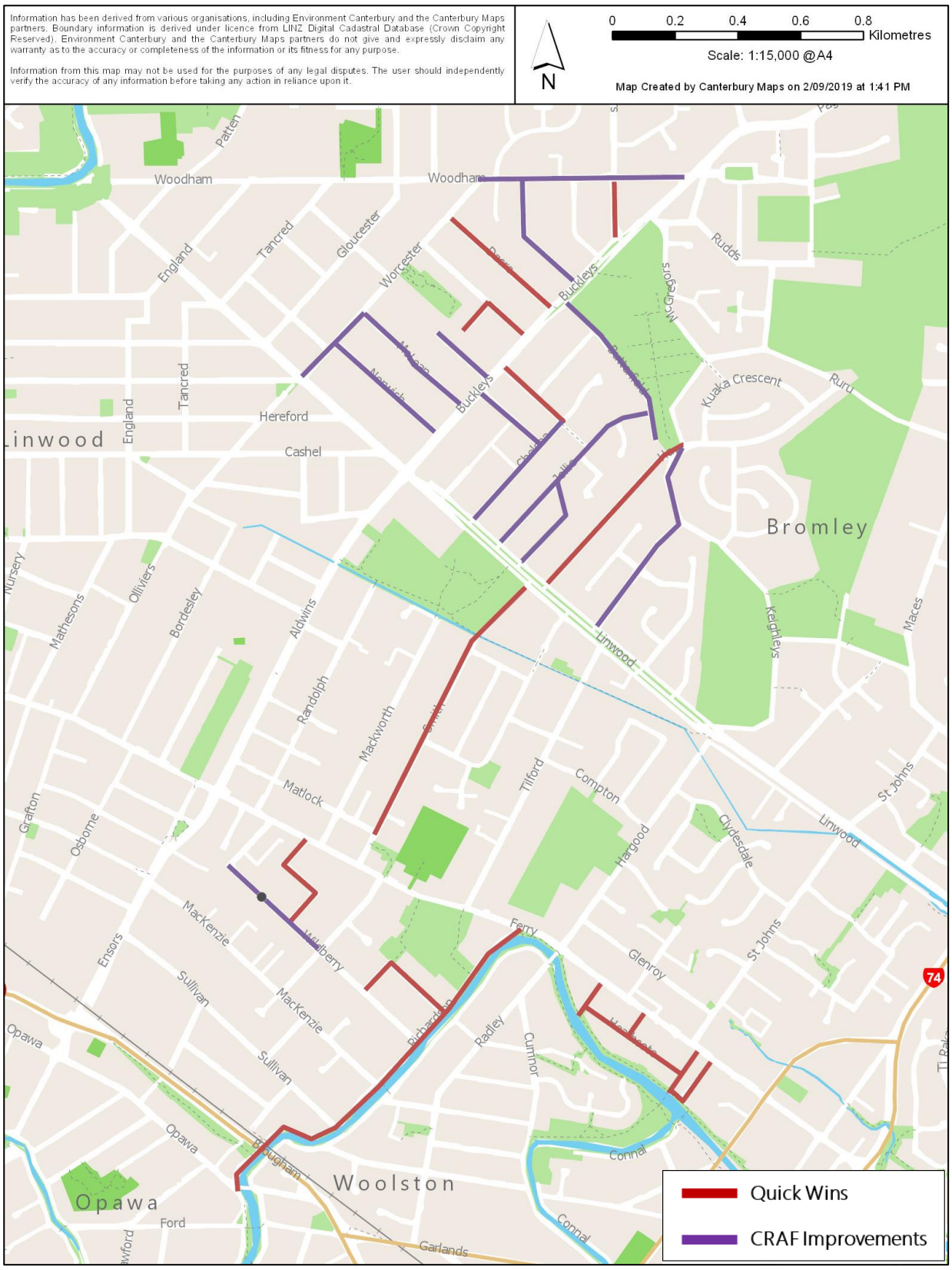


Figure 12 New Brighton Indicative Programme

Figure 13 Riccarton Indicative Programme

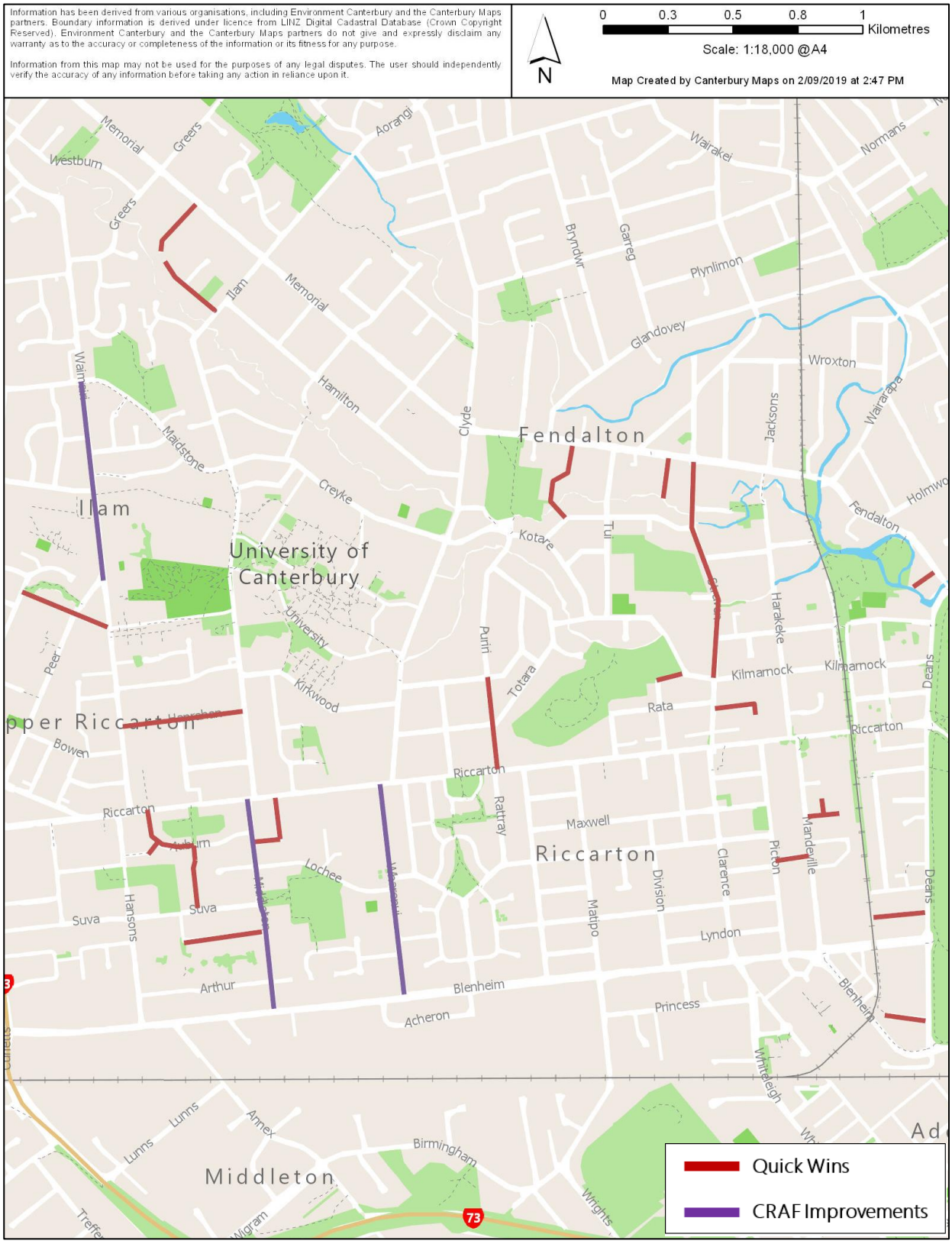


Figure 14 Richmond Indicative Programme

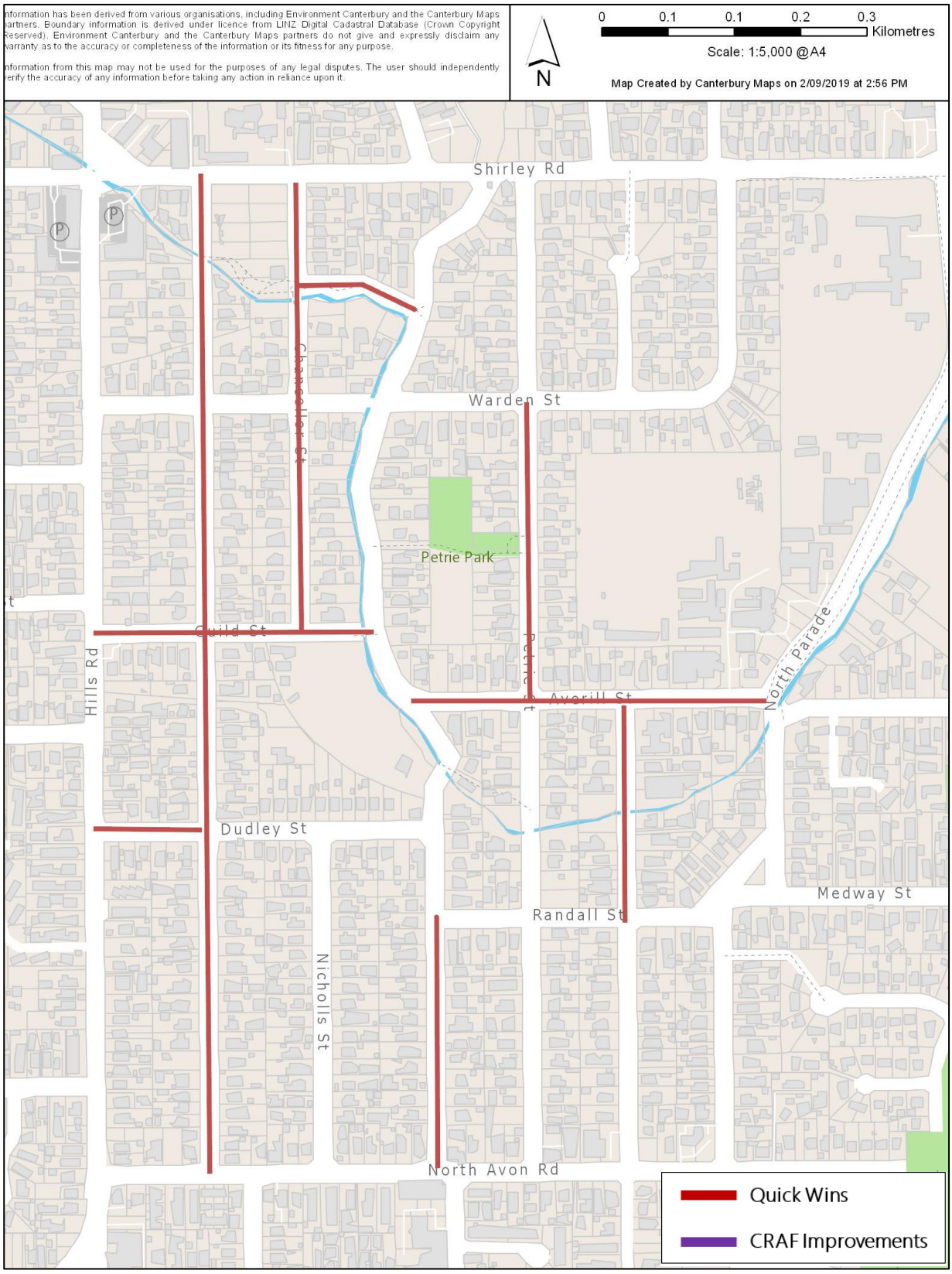
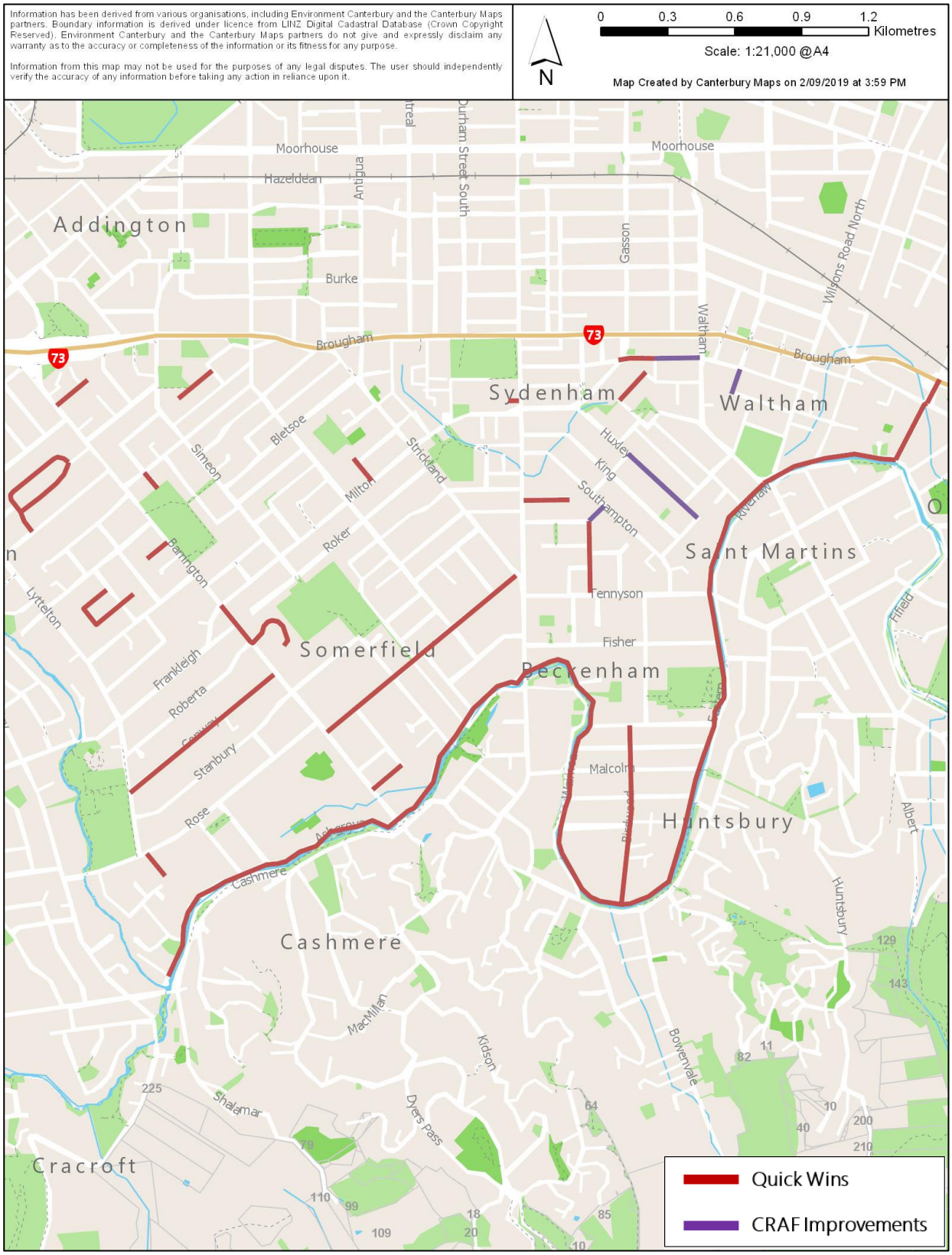


Figure 15 Spreydon, Somerfield, Waltham and Beckenham Indicative Programme



4.3.2 Investment in Road Safety Treatments

To address critical road safety constraints and challenges the Council is proposing to invest $5-7m from the CRAF to progress targeted road safety initiatives across the wider Christchurch transport network (in addition to targeted safety improvements proposed for the five areas detailed under heading 4.3.1 above). The recommended programme targets corridors where collectively 829 crashes have occurred, including 9 fatal crashes and 107 serious injury crashes.

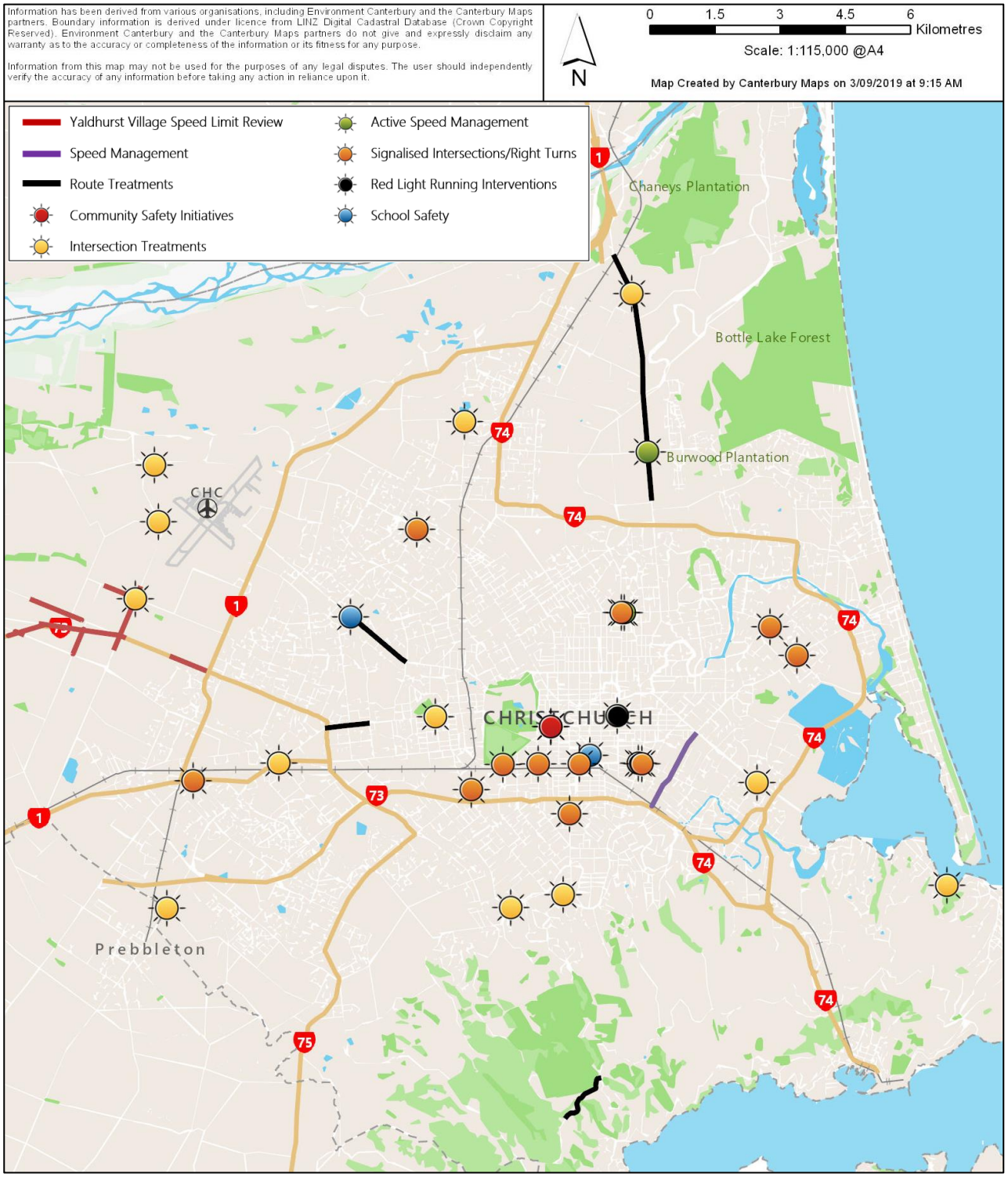
Council has prioritised a programme of road safety improvements that target eight themes, which align with the risk areas identified for Christchurch (as summarised in section 3.2.2, these include intersections, appropriate speed and the safety of active mode users). The types of treatments proposed vary on a location basis depending on the particular challenges and constraints identified, however the type of interventions proposed include:

- **Theme 1: Intersection safe system treatments to contribute towards Vision Zero outcomes:** Using the NZ Transport Agency High Risk Intersection Guide, Council is proposing to use the CRAF investment to accelerate the delivery of interventions that target the highest risk-intersections in Christchurch and seek to address the key risks identified at each site.
- **Theme 2: School safety:** To encourage more young people to walk and cycle to school and college Council is proposing to invest in pedestrian crossing and footpath improvements.
- **Theme 3: Red light running initiatives:** To address the high proportion of intersection crashes Council is proposing to implement a suite of measures to reduce instances of red light running at signalised intersections. Treatments include installing mast arms to improve the visibility of traffic signals and working with the police to implement enforcement measures such as red light running cameras.
- **Theme 4: Speed management (corridors):** The CRAF will enable Council to proactively deliver safety improvements at high risk locations, areas of growth and to support new developments.
- **Theme 5: Signalised intersections and right turn safety:** To reduce the risk of crashes at signalised intersections Council will implement a suite of treatments such as adding dedicated right turn arrows to traffic signal phases, improving the visibility of traffic signals and reducing the speed limit at high risk, multi-movement intersections.
- **Theme 6: Active speed management (intersections):** Targeting high risk intersections where excess speed has been identified as a key contributing factor in a number of crashes. A speed review of the approaches to the intersections will be completed and a potential reduction in the posted speed limit will be implemented on the intersection approach arms.
- **Theme 7: Route treatments:** Council is proposing to implement minor safety improvements to address high crash risks. These are typical low cost interventions that are delivered as part of Council's minor road safety improvements programme.
- **Theme 8: Community Board road safety initiatives.**

A list of the specific locations proposed for CRAF investment to address road safety issues is provided in **Appendix F** and graphically displayed in Figure 16 below.

The map demonstrates the number of corridors and intersections proposed for safety improvements as a result of the accelerated delivery made possible by the CRAF investment. In delivering the safety initiatives Council will continue to liaise with key road safety partners including NZ Police and NZ Transport Agency.

Figure 16 Road Safety Improvements Indicative Programme



4.3.3 Investment in Public Transport Improvements

A separate business case is being progressed by the Greater Christchurch Partnership to determine the public transport routes that should be prioritised for improvements as part of the recommended programme.

CRAF investment will be confirmed upon completion of the Public Transport Foundations Business Case and would likely be used to fund public transport improvements such as bus lanes and bus gates at intersections and the approaches to intersections to improve bus travel times and overall trip reliability.

4.4 Economic Analysis

4.4.1 Transport Benefits

The economic appraisal of the recommended programme (five areas and targeted safety improvements) has been undertaken in accordance with the NZ Transport Agency's Economic Evaluation Manual (EEM) procedures.

The NZ Transport Agency Investment Assessment Framework 2018-21 addresses the priority of value for money using a benefit cost appraisal. In demonstrating that investment will achieve value for money, the Government Policy Statement expects that investment proposals included and prioritised in the National Land Transport Programme will achieve a Benefit Cost Ratio (BCR) greater than one.

For the purpose of this investment case both the Base/Do minimum option and the recommended CRAF investment option were assessed (noting that the proposed investment in public transport improvements has been excluded from this economic analysis as this will completed through the parallel public transport investment cases).

The analysis has been carried out in accordance with the EEM, with a 40 year benefit period following a 36 month construction period. The assumed costs are set out in Chapter 6 Financial Case. The recommended option project (inflation adjusted) cost estimate is **$34,768,500** over a three year implementation period (July 2021 to July 2024).

The detailed methodology adopted to undertake the BCR calculation is included at **Appendix G** for completeness. The main benefits that have been referred to within this report relate to:

- Reduced Vehicle Operating Costs - due to reductions in local road roughness levels (per km); and
- Reduced crash costs – assumed a crash reduction rate of 15%[21] in the five areas and specific reduction rates have been applied to each of the targeted safety themes.

The analysis indicates an expected **BCR of 4.4 for the recommended programme** as shown in Table 14.

An assessment of the individual investment areas (five areas and targeted safety improvements) has also been undertaken to ensure value for money. Overall the five areas have a combined BCR of 1.7. The targeted safety improvements have a combined BCR of 20.

It is noted that this investment case has adopted a conservative approach to benefit calculation. The CRAF is likely to result in additional transport benefits related to travel time savings, trip reliability improvements, mode shift/uptake of active modes and public transport and a reduction in CO_2 emissions.

[21] The 15% crash reduction value is a conservative figure that has been applied based on a review of NZTA's Crash Estimation Compendium 2018. A review of the type of treatments that are likely to be implemented in urban areas shows that the safety benefits could be higher than the 15% used in this report (such as kerb extensions (35% reduction), traffic calming (20% reduction), median intersection splitter islands (35% reduction) or flush medians (15% reduction). For the purpose of this report a conservative figure for crash reduction has been applied because the exact treatments are yet to be identified (crash reductions are likely to be higher).

It is also important to recognise that the BCR only provides part of the story. The CRAF investment is anticipated to have a number of strategic transport benefits as well as a number of social, environmental and economic benefits, as identified within this investment case, which cannot be fully demonstrated within the current EEM. Recent transport improvements undertaken in the Richmond area demonstrate the impact to quality of life that these transport projects can have on the local community.

Council recently received the following feedback from the Secretary of the Richmond Residents and Business Association:

I have had numerous comments from residents who have all stated in different ways that the rebuild of the roads: North Avon, Randall, Stapletons, etc. has generally lifted spirits in the community and allowed us to start shedding the somewhat depressing feeling of living in a neglected area of the city. This has been perhaps reflected in part in the way residents are celebrating the planting programmes and in caring for the grass berms outside their own properties. A key comment for me was the statement by an elderly resident who was seriously considering selling up and moving elsewhere when she stated, as we stood and observed a recently completed part of the programme: "I think I'll stay here now - it looks really nice now!"

Table 14 Economic Analysis Summary

Timing		
Earliest implementation start date	Construction start July 2021	
Expected duration of implementation	Construction duration 36 months	
Economic Efficiency		
Time zero	1 July 2021	
Base date for costs and benefits	1 July 2018	
Present value costs (net cost)	$31.9 million	
Present value benefits (net benefit)	139.9 million	
Benefit Cost Ratio	**4.4**	
User Costs and Benefits		
Present value costs	**Do-Minimum**	**Recommended Option**
Vehicle operating user costs	$38.5 million	$4.2 million
Crash user costs	$412.5 million	$306.9 million
Present value – total net user costs/benefits	$451.1 million	$311.1 million

4.4.2 Additional and Wider Economic Benefits

In addition to the transport benefits quantified in the economic analysis this programme is expected to result in several wider economic benefits, particularly in the five areas, these include:

- Improved access;
- Enhanced urban amenity and a greater sense of local pride in the local environment;
- Additional safety benefits;
- Mode shift benefits (travel time savings, environment benefits, and health benefits); and
- Increased business and community confidence in the regeneration of the city.

The proposed programme facilitates improved access to employment and recreation locations. This results from improved local transport networks and enhancing the attractiveness of walking and cycling facilities, local road corridors and the attractiveness of public transport services. These improvements provide time and cost savings to users, and support continued job growth and community connectedness.

The recommended economic option assessment does not explicitly include mode shift and public transport benefits. It is anticipated that improved accessibility provided by better quality walking, cycling and public transport facilities and safety initiatives will also facilitate greater mode shift from private vehicle usage to active modes and public transport. Wider social and environmental benefits result from mode shift away from private vehicle usage. Aside from de-congestion/ travel time benefits, environmental benefits include CO_2 reduction from a decrease in vehicle kilometres travelled, and lower levels of vehicle contaminants in storm water run-offs into natural water sources.

Health benefits relate to reduced hospital costs through use of active modes and walking to public transport facilities. Increasing travel by walking, cycling and public transport will help promote and maintain active lifestyles, and have associated economic benefits from reduced mortality and morbidity.

For several years some Christchurch residents have had to live with damaged, unsightly, and hazardous transport assets. Properly repaired and fit for purpose transport infrastructure will contribute to an enhanced urban amenity, improved liveability and a greater sense of pride in the local environment.

Community pride can be enhanced through the extra amenity, improved transport network form and ease of movement within the areas. Communities are more likely to be proud of their suburb if the local road and active mode networks meet the levels of service they expect and are comfortable to use.

The safety benefits in terms of crash reduction have been quantified in the economic assessment. Additional safety benefits are likely to accrue from improvements to the community transport networks, in the form of physical safety from improved surfaces for pedestrians and cyclists, plus the overall perception of safety for road corridor users.

Community perceptions of safety are expected to improve particularly among the most vulnerable persons in society such as those with mobility impairments, the elderly and young children. The breaking down of these psychological access barriers can lead to greater participation / integration in community activities and an enhanced sense of local wellbeing (mental health benefits).

The recommended option will improve local business and community confidence. Investment in the transport systems of these communities provides consumers and businesses with investment certainty, and reassurance that the area is worth investing in, which in turn can encourage more private spending and investment and local land value uplifts.

4.5 Assessment Profile

When evaluating the case for CRAF investment, the Government Policy Statement (GPS) requires local government to demonstrate how investment shows alignment with the outcomes and priorities sought through the GPS. Evaluation of an investment case must consider a number of factors including, but not limited to, achieving safety, access, environmental, and value for money outcomes.

An evaluation has been undertaken using the NZ Transport Agency Investment Assessment Framework for the 2018-21 National Land Transport Programme to assess the investment case across three factors:

- An assessment of the investment case against the outcomes sought through the GPS – known as results alignment;
- Evaluation of the economic efficiency of the investment case (BCR); and
- Assessment of the priority of the investment case (prioritisation).

4.5.1 Results Alignment – High

An indicative 'High' rating for results alignment has been identified on the basis that the investment case addresses the components of the criteria as detailed in Table 15.

Table 15 Results Alignment

Strategic Priority	IAF Criteria
Safety (Very High)	Promotes the implementation of an approved speed management approach focused on treating the top 10 percent of the network that will result in the greatest reduction in deaths and serious injuries.
	Promotes changes made to safety regulation that address one of the high priority safety areas.
Access - Liveable Cities (High)	Supports high priority elements in agreed integrated land use and multi-modal plans.
	Addresses a significant resilience risk to continued operation of the network.
	Makes best use of key corridors that prioritise multi-modal use and freight.
	Provides significant operational efficiencies to reduce the costs of meeting appropriate levels of service without impacting benefits adversely.
Road Maintenance (Very High)	Addresses the immediate response and reinstatement of levels of service as a result of the significant impact of natural events.
	Addresses a significant gap in customer levels of service through a moderate increase in investment to provide safe and resilient access to social and economic opportunities, including tourism and freight movement.

Strategic Priority	IAF Criteria
	Proposes initiatives to make best use of the existing network, including use by people who identify as disabled, and reduce environmental and public health harms.

4.5.2 Prioritisation

Based on the results alignment and overall BCR for the recommended programme of 4.4, the priority given to the CRAF investment case is 4. A prioritisation evaluation provides an assessment of the level of priority given to the investment case if funding were to be sought through the National Land Transport Fund (NLTF).

5. Commercial Case

The CRAF Roading and Transport improvements identified as part of the recommended programmes are considered to be commercially viable.

The delivery of roading and transport improvement projects like those identified in this investment case is not unique to New Zealand infrastructure professional services, the construction industry, or the Christchurch City Council. Council spends close to $1 billion annually on a wide range of works, goods and services that enable the delivery of community infrastructure, facilities and services for the citizens of Christchurch. Therefore, it is not considered that implementation of the improvement projects will present any significantly new or bespoke commercial opportunities or risks to the parties involved in the implementation of the proposed programme.

5.1 The Procurement Strategy

It is intended that project management services, the investigation/scheme design, consultation and detailed design phases of the recommended programme delivery will be undertaken by Council staff.

Procurement will be required for contractors to construct the roading and transport improvement projects. The Council maintains a pre-qualified supplier list of roading contractors which will form the basis for procurement of contractor services. Where appropriate, the projects identified in the proposed programme will seek early contractor involvement to achieve optimal design and value for money. Contract terms and payment mechanisms will incentivise high-quality on time delivery.

This approach to market aligns with Local Government Act procurement requirements, as well as Council's detailed internal Procurement Policy. The Council's vision for its procurement activities is:

"The Council's procurement activity delivers value for money for residents using a clear framework of accountability and sustainability, supporting Council's social, economic and environmental priorities, and contributing to Christchurch being a city of opportunity for all."

In making procurement decisions, the Council will have regard to the contracting principles detailed in the Controller and Auditor-General's Procurement Guidance for Public Entities, June 2008 and NZTA's procurement rules. In addition, the Council has identified its own strategic procurement principles that align with the Council's Vision, Strategic Priorities and Community Outcomes. These principles are integrated into the Council's procurement decision-making framework and are intended to promote the delivery of local benefit. The framework and methodology the Council uses to assess local benefit is included in the Council's Procurement Manual.

- **Open and effective competition:** Open and effective competition maximises the prospect of the Council obtaining the best procurement outcome. The Council will ensure that suppliers wishing to do business with Council are given a reasonable opportunity to do so and that the procurement and relationship management processes used ensure that suppliers look to continue to do business with Council.
- **Fostering local business:** The Council believes its procurement activity should contribute to having efficient and cost-effective local suppliers that support a dynamic and innovative Christchurch economy. The Council will ensure advantages from local procurement are recognised and considered in procurement decisions, local businesses are encouraged to explore unique and innovative initiatives, social procurement initiatives are progressed to provide economic and employment opportunities to

communities in Christchurch and that where practicable, tenders are free from requirements that could limit opportunities for local suppliers.

- **Environmental enhancement:** The Council's procurement activity will have regard to proactive strategies that deliver better outcomes for the environment. The Council will maintain a commitment to long-term, ecological sustainability through procurement that conserves resources, saves energy, minimises waste, protects human health and enhances environmental quality and safety. In a procurement sense this includes a particular focus on improving energy and water efficiency, reducing, re-purposing and recycling where appropriate, and minimising greenhouse gas emissions.
- **Social equity:** The Council has a commitment to promoting diversity, acceptance, fairness, compassion, inclusiveness and access for people of all abilities. A focus is placed on citizens who are underrepresented and people with less opportunity. Social equity contributes to building stronger and more resilient communities. Depending on the nature of the procurement, Council will explore opportunities to engage social enterprises to provide works, goods and services.
- **Ethical behaviour and fair dealing:** Applying sound ethical principles and equitable and fair opportunities for procurement promotes the likelihood of better procurement outcomes. Having high standards of professionalism in procurement processes, systems and procedures enables the Council to provide a consistent approach to procurement requirements, reducing transaction costs and risks for suppliers and building Council supplier relationships and trust. This lowers the cost of doing business for all parties.

5.2 The Procurement Plan

The proposed timeline for the implementation of the roading and transport improvements is within the next LTP cycle, which primarily covers the financial years 2021/22 to 2023/24. Council will procure contractors to implement the improvements from FY21, following the completion of the investigation/scheme design, consultation and detailed design phases.

The timing of implementation of each individual road and transport improvement project will determine whether the works are procured on an area/package or site specific basis. The ongoing maintenance of the roading and transport projects will be delivered through existing Council term contracts for roading maintenance.

6. Financial Case

The Financial Case focuses on the costs and revenues associated with the roading and transport improvements. The financial impact of the recommended programme should be considered in the context of the benefits and value it realises for the city and wider region.

Under the recommended option $40 million of investment is sought to implement the capital improvement projects from 2021/22 to 2023/24. The proposed cost breakdown is shown in Table 16.

Table 16 Indicative Programme Estimated Costs (2019 costs)[22]

Interventions	Cost Estimates	Total (rounded)
Five Areas (see Report Cards for cost of improvements by street)		**$30,000,000**
- Linwood/Woolston	$5,103,500	
- New Brighton	$6,677,500	
- Riccarton	$6,990,000	
- Richmond	$5,879,500	
- Spreydon, Somerfield, Waltham, Beckenham	$5,118,000	
Safety (indicative splits)		**$5,000,000**
- Intersection safe treatments	$1,250,000	
- School safety	$250,000	
- Red light running	$250,000	
- Speed management	$500,000	
- Signalised intersections/right turn safety	$1,250,000	
- Active speed management	$500,000	
- Route treatments	$500,000	
- Community safety initiatives	$500,000	
Public Transport (interventions to be confirmed through separate business case)		**$5,000,000**
TOTAL	**$40,000,000**	

[22] Approximate cost estimates provided noting that a range of funding is provided within each theme: five areas $25-30 million, road safety $5-7 million and public transport $5-8 million.

7. Management Case

The Management Case identifies the organisation responsible for implementation and sets out how the implementation phase will be managed.

7.1.1 Programme Management Arrangements

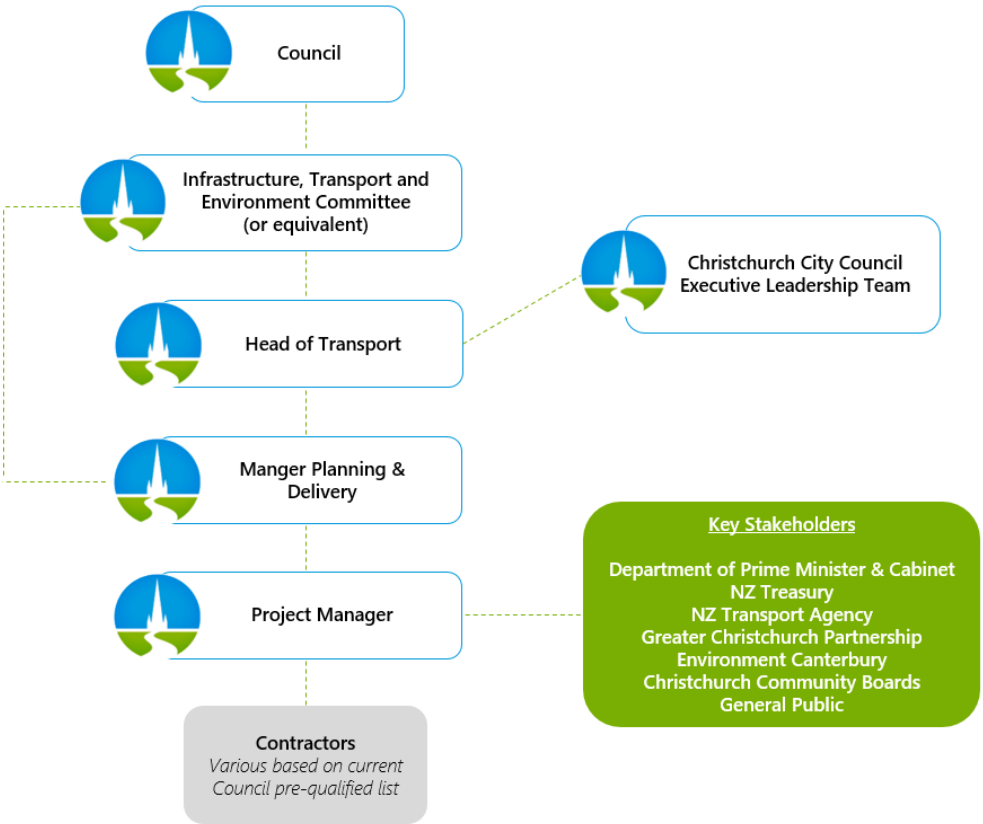
The recommended programme comprises of a portfolio of projects for the delivery of critical roading and transport improvement projects across Christchurch City.

In the event that this investment case receives formal approval, the delivery of the roading and transport improvements will be managed though the Council's transport project management team. Council's project management team will oversee the investigation/scheme design, consultation and detailed design phases of the recommended programme from the date of approval of this investment case through to mid-2021. The team will also oversee the construction and implementation of the improvements from 2021/22 to 2023/24

7.1.2 Proposed Governance Arrangements

The proposed governance structure and the reporting arrangements for the project are detailed in this section. The senior responsible owner for this investment case is Richard Osborne (Head of Transport, Christchurch City Council). Overall governance of the proposed roading and transport improvements will be provided via the existing Christchurch City Council Transport Steering Group, who will provide regular progress updates to the Council's Infrastructure, Transport and Environment Committee, as shown in Figure 17.

Figure 17 Proposed Governance Arrangements



7.1.3 Project Plan and Milestones

The implementation of the recommended programme is estimated to take approximately four years to implement. This timeframe includes the investigation/scheme design, consultation, detailed design and construction phase of the recommended programme.

The recommended programme will be progressed and delivered in accordance with Council's normal process for delivering capital works. This includes undertaking consultation with all relevant stakeholders and affected parties, as required under the Local Government Act. Ongoing public engagement will be undertaken through the investigation/scheme design, detailed design and construction phases to confirm the specific design of the interventions proposed.

7.1.4 Risk Management Planning

A risk register has been drafted to list all the identified risks and the results of their analysis and evaluation. Information on the status of the risk is also included. The risk register is intended to be continuously updated and reviewed throughout the course of a project. The programme risks were identified by first taking a list of common risks for large scale capital programmes and modifying it to provide high level coverage of the particular risks likely to be faced by this programme.

Table 17 Risk Register

Stages	Risks
Design	Risk relating to the quality and reliability of design underlying capital works and changes to designs following public consultation
Planning	Risk relating to consenting and regulation
Land condition	The suitability of land in relation to geotechnical factors (seismic risk, liquefaction etc.) and land contamination
Cost escalation	Increases in the costs of construction over time
Benefits realisation	Benefits such as mode shift and reduction in crashes is less than expected; reducing benefits realisation
Interface risk	Interdependencies between different projects during construction and operations, and associated risk of delay/disputes
Change to requirements	Changes to the requirements for the programme
Timing risk	Timely completion of the work, and the risk of associated consequences
Operating	Risks relating to successful operations
Whole of life costs	Risk related to the cost of operation on a whole-of-life basis

7.2 Post-Project Evaluation Planning

This section provides an overview of the data collection that Council is proposing to undertake to monitor the impact of the investment in critical roading and transport improvements. It is proposed that a more detailed and site specific benefit realisation plan will be developed at subsequent phases of the project.

Accurately understanding what is being achieved by the CRAF investment programme will help to guide the scope of future roading and transport improvement projects, as well as provide assurance to the Crown and Treasury that the investment is providing value, in terms of contributing to targeted performance measures.

Table 18 Proposed Monitoring Measures

Benefit	Measure	Description
Access	Mode share	Percentage of active mode and public transport journeys to work as a proportion of all trips (Census)
	Public transport reliability	Percentage of scheduled public transport services that arrive within 5 minutes of the scheduled time
Safety	Crashes by severity	Number of crashes be severity as a proportion of total vehicle kilometres travelled (over a five year period)
Asset Condition	Average road roughness	Average road roughness on the local road network as defined by NAASRA guidelines
Quality of Life	Customer satisfaction	Satisfaction with the condition of Christchurch roads Satisfaction with the condition of Christchurch footpaths (Life in Christchurch Annual Survey)

8. Next Steps

This investment case seeks formal approval from Treasury and the Crown to commence the implementation of the recommended programme of accelerated roading and transport improvements. This investment case has been informed by the Treasury's Better Business Case guidance.

At this stage the recommended programme has only been developed to meet the investment case requirements. Additional work is still required prior to implementation, which includes (but is not limited to):

- Investigation/scheme appraisal
- Formal public consultation as specified under the Local Government Act
- Safety audit process
- Obtaining elected member approval
- Detailed design
- Supplier tender/procurement process
- Construction (and post construction safety audits)

Successful delivery of this programme will involve ongoing collaboration with project partners from the Crown/Treasury, NZ Transport Agency and Environment Canterbury throughout the life of the programme, to ensure a one network approach is adopted that maximises value for money and best achieves the outcomes identified by this CRAF roading and transport improvements investment case.

GHD Advisory

Appendices

Appendix A Investment Proposal

Christchurch Regeneration Acceleration Facility

Investment Proposal Template

Date:	29/03/2019

Proposal Outline

Name of Proposal	Roading and Transport Improvements

Eligibility criteria	☐ ~~Residential Red Zone~~ ☐ ~~Stadium~~ ☑ ~~Three waters / Land drainage /~~ Roading

Overall priority rating	High

Brief description of the Proposal	Eight years on from the Canterbury earthquake sequence the city of Christchurch is transitioning from recovery to regeneration. Following the 2010 and 2011 earthquakes, Christchurch continues to face the challenge of redeveloping a vibrant city that will attract and retain people to participate in the area, to invest, work, live and visit. The Christchurch transport system suffered considerable damage and disruption following the Canterbury earthquake sequence. The earthquakes not only caused damage to transport infrastructure and key assets, but also altered travel behaviours as a result of changing land use patterns. The New Zealand Government has committed significant resources to assist with the recovery and regeneration of the city. Substantial progress has been made since the earthquakes to repair damaged transport assets and rebuild the city. Businesses and residents are now relocating back to the Central City and travel patterns have stabilised. The Capital Regeneration Acceleration Facility (CRAF) presents a unique opportunity for Christchurch City Council to accelerate the delivery of critical safety, travel modal choice and asset improvements to the Christchurch transport system and respond in a timely manner to meet local needs. The Christchurch transport system faces a number of challenges. The following problems in particular have been prioritised for the CRAF: **Problem 1: Community wellbeing and accessibility (inclusive access for all)** The transport system in a number of Christchurch communities provides a much lower level of service than other New Zealand cities. This is primarily due to poor quality streets with many pavements and roads damaged as a result of the earthquakes and the changing traffic patterns in the post-earthquake recovery, whereas others have only had patchwork repairs. This contributes to lower levels of modal choice (particular pedestrian footfall and cycling), increases personal and collective safety risks within these areas and impacts community cohesion and social wellbeing.

Council proposes to use part of the CRAF investment to target five geographic areas of Christchurch to improve asset condition, safety and access issues to meet the needs of Christchurch residents.

As an example Bowhill Road in the suburb of New Brighton has been identified as a potential candidate for CRAF investment. Bowhill Road is a collector road that experiences a number of issues related to asset condition, safety and access that the community are wanting Council to address.

The corridor provides community access to several parks, playing fields, a community golf course, a playground and access to Rāwhiti School (primary) and North Beach Community Pre-School. It also provides access to North Beach which is a popular surf beach and clubrooms for wider Christchurch residents.

The road requires isolated repairs to improve the condition of the surface and the footpaths. The corridor is adjacent to two bus routes and therefore improvements to the footpath are required to increase the attractiveness and access to nearby bus stops, whilst addressing wider safety issues.

There have been a total of 14 crashes on the corridor in the past 10 years including one fatal accident and two serious injury crashes. Bowhill Road has been identified as a medium-high personal risk and low-medium collective risk road based on the KiwiRAP risk rating framework.

Improving the corridor for all users is expected to encourage higher uptake of active modes and public transport, improve the safety and risk rating of the corridor and improve the condition of the transport assets.

A second example is Suva Street in the suburb of Fendalton/Riccarton that has also been identified as a potential candidate for CRAF investment. Suva Street will form part of two of the 13 planned Major Cycle Routes in Christchurch (Nor-West Arc and Southern Express). The corridor also provides access to Middleton Grange School and playing fields.

There have been a total of 12 crashes on the corridor in the past 10 years including three minor and nine non-injury crashes. Suva Street has been identified as having a medium personal risk rating using the KiwiRAP framework.

Improvements to the corridor to facilitate the safe movement of cyclists is expected to contribute to wider safety improvements for all modes and improve the current condition of the corridor. Current footpaths in the area are narrow which limits pedestrian access or attractiveness, particularly for trips to/from Middleton Grange School on foot or by cycle.

These two case studies have been provided as exemplars to demonstrate the evidence based approach that Council is undertaking to identify priority projects for CRAF investment that best achieve the multiple outcomes sought (asset condition, safety and access) to meet the needs of Christchurch residents.

These case studies also provide examples of the type of investment proposed for the CRAF to improve community wellbeing and accessibility, whilst addressing the transport issues by delivering a coordinated and accelerated programme of improvement works.

Problem 2: Transport safety

Transport safety and in particular safety for all road users at urban intersections, speed when driving, the safety of pedestrians and cyclists, young users and motorcyclists have been identified as key risk areas for Christchurch[1]. The following evidence supports these priority risk areas:

- 50% of death/serious injury crashes were at intersections (427)
- 104 crashes resulting in death/serious injury noted driving "too fast" as a key contributing factor
- 35% of death/serious injury crashes involved pedestrians/cyclists (301)

Problem 3: Modal choice and public transport

The predominant travel choice for all trips is private car (83% of all trips to work)[2]. Increased car use (pre-earthquake) was leading to undesirable traffic congestion (on some parts of the transport network), curtailing mode choice and leading to safety problems.

Following the earthquakes, Canterbury has been the fastest growing region outside of Auckland, with significant growth occurring to the north and south-west of Christchurch and in neighbouring districts. As this growth continues there is a need to encourage greater use of modes such as public transport, carpooling, walking and cycling to preserve current travel time reliability and to reduce negative impacts on the environment, population health and safety.

To achieve greater levels of modal shift, alternative modes need to be more attractive and offer comparable travel times to the private car. Public transport investment is vital to accommodate increasing demands on the transport network. Investing now means proactively ensuring Christchurch has a well-functioning transport system that can meet the city's future needs.

Investment Proposition

This proposal seeks $40m of investment from the $300m CRAF to accelerate the delivery of the following transport improvement projects that are considered critical to the ongoing regeneration of Christchurch:

- Approximately $25m to $30m to deliver integrated safety, modal choice and asset improvements to communities which experienced significant damage and disruption following the earthquake sequence[3]. The five proposed areas are Richmond, New Brighton, Linwood/ Woolston, Spreydon and Fendalton/ Riccarton[4].

- Approximately $5m to $7m to progress targeted minor safety improvements which seek to reduce death and serious injury crashes.

- Approximately $5m to $8m investment towards the implementation of bus priority on one of the key public transport routes in the city, or upgrading specific intersections to introduce bus priority measures on a core route.

1 Road Safety Action Plan 2018-2019: https://www.ccc.govt.nz/assets/GeneratedPDFs/Road-Safety-Action-Plan-2018-19.pdf
2 Census data
3 If the Investment Proposal is approved the allocation of funding will be confirmed as part of the Investment Case.
4 The proposed areas are mapped in **Attachment 1**. Note that the red zone road network is not covered in this proposal.

Overview of benefits and costs

The transport system shapes urban areas and influences community wellbeing. This proposal has been developed with a strong focus on alignment with the Government Policy Statement on Land Transport (2018) and the strategic priorities of safety, access, environment and value for money.

This proposal also reflects the wishes of the Christchurch community following recent consultation as part of the development of the 2018-2028 Long Term Plan. Delivery of the proposed transport improvements will achieve the following:

- A transport system which meets the needs of people, businesses and enables accessible, sustainable, affordable and safe travel choices
- Healthy and safe travel choices, supporting greater use of walking, cycling and public transport use
- A transport system that is resilient and able to meet the changing needs of people and businesses
- Delivering the right infrastructure and services to the right level at the optimal cost which responds to the communities' wishes.

Table 1 Overview of investment proposition, expected benefits and costs

Investment Description	Benefits	Cost
To deliver safety improvements on corridors and intersections within five geographic areas that have medium or above collective or personal risk or are supported by crash data from the past 10 years. Improve access to schools and key activity centres by walking, cycling and public transport within the five geographic area. As part of the safety and access improvements it is expected that the condition of the transport asset will also be improved, through kerb to kerb rebuilds to narrow streets, reduce speeds, improve pedestrian crossing opportunities, repair the road surface, kerb and channel and provide amenity improvements to these communities.	Reduced collective and personal risk Improved access to key local services Reduced reliance on the private vehicle, resulting in a reduction in emissions Improved wellbeing outcomes through uptake of active modes Reduced maintenance and renewal costs due to deteriorating assets	$25m to $30m
Targeted improvements to address high crash risk areas, including but not limited to: ▪ Intersections ▪ School safety ▪ Red light running initiatives ▪ Speed management ▪ Signalised intersections (right turn safety) ▪ Minor safety initiatives ▪ Community safety initiatives	Reduced collective and personal risk Improved safety at priority and signalised urban intersections Improved pedestrian safety near schools Reduced crash severity	$5m to $7m
Targeted improvements to improve bus reliability through bus priority measures on a core route or at key intersections along a core route.	Increased access to key local services Increased bus patronage	$5m to $$8m

	The proposed CRAF investment would enhance Council's current low cost/high value safety improvements programme budgeted at $18m over the next three years. Typically, these high value/low cost improvements achieve high safety benefits and provide good value for money. Public transport is an ongoing focus for the regeneration of the city. The Regional Public Transport Plan (2018) and the Public Transport 'Futures' Business Case (2018) both outline the need for increased investment in the public transport system. Both of these documents identify the need to make public transport more reliable, make journey times more competitive with private cars, enhance user perception, and attract higher patronage. The proposed integrated investment targeting five communities seek to address multiple issues (asset condition, safety, access) and contribute to developing a transport system that meets the needs of local communities and businesses. These improvements aim to provide accessible, sustainable, affordable and safe travel choices to support recovery and the regeneration of suburban areas. An overarching aim of the CRAF is to address low resident satisfaction with the current state of the transport system and to improve mental and physical wellbeing[5]. The low resident satisfaction with the state of the transport system is hampering a focused and expedited regeneration process. Lack of timely attention will likely increase the dependency on private vehicles, increase the risk of further crashes and lead to the ongoing dissatisfaction from local communities. From an economic perspective, the improvement projects will likely realise quantitative economic benefits related to a reduction in whole of life operational costs of both the roads and vehicles, improvements to travel time savings and a reduction in accident costs. The improvement projects will also likely reduce external costs associated with carbon emissions, air, noise and water pollution. Likewise, focusing investment on the worst affected areas will ensure the most favourable net present value is achieved as the benefits will be more pronounced.
Commercial and / or financial viability	The resulting investment will see widespread social, environmental and economic benefits throughout Christchurch, without placing additional burden on ratepayers. The investment will also release Council funding for other improvement projects including the maintenance and renewal of transport networks, water and wastewater infrastructure, improvements to parks and open spaces and the construction of new community facilities as outlined within the 2018-2028 Long Term Plan. It is noted that NZ Treasury have not applied a timing restriction to the CRAF. As a result, projects can be delivered as quickly or slowly as the market will allow. Ideally, the Council is keen to implement the proposed improvements as soon as possible. However, the availability of resources, potential funding from the NZ Transport Agency, and staging requirements may impact on delivery timeframes and will be further explored through the full business case.

[5] Three main consultative processes have occurred over the last year, the Long Term Plan, Residents Survey, and the Life in Christchurch: Transport Survey. The Long Term Plan and the Life in Christchurch: Transport Survey were open to all and received more than 3000 responses. The Residents Survey was telephone based and received almost 1000 responses.

Indicative total costs and breakdown	▪ Approximately $25 to $30m for improvements to the transport system within five locations (approximately $6m per area). This will allow for the key issues in these areas such as safety, access and asset condition to be addressed in a coordinated and integrated manner. ▪ Approximately $5m to $7m for minor safety improvements to allow for the implementation of low cost/high value interventions to improve safety in areas that have received increased traffic due to land use and traffic pattern changes following the earthquake sequence. ▪ Approximately $5m to $8m towards the acceleration of projects to improve bus priority on a key route across the city or at specific intersections on a core route.

Acceleration Facility funding is requested and when it is likely to be required

Initial funding is expected to be required in July 2019. The summary of funding required is outlined below.

18/19	19/20	20/21	21/22	22/23	Out-years	Total
0	$5M	$15M	$15M	$5M	0	$40M

Other funding sources

The proposal seeks to invest $40m from the CRAF towards the accelerated delivery of priority transport improvements. The Christchurch City Council are considering whether to commit additional local funding towards accelerating further transport improvement projects.

In 2018 the Council increased the level of funding safety interventions and public transport through the Long Term Plan. This has been included in the Regional Land Transport and National Land Transport Programmes. However, this level of funding will not be able to achieve a demonstrable improvement to the overall transport system in a timely manner.

The NZ Transport Agency may also provide additional investment through the National Land Transport Programme fund. The NZ Transport Agency could potentially contribute subsidy of between 50-75% of the investment, dependent on available funding (in each activity class), the funding assistance rate used and alignment to key investment priorities.

Further discussions will be required with the NZ Transport Agency to determine if subsidy on Crown grant funded projects is possible and what process would need to be followed. If the works are eligible for NZ Transport Agency subsidy they would be subject to normal Regional Land Transport Plan/Long Term Plan processes and/or full business case justification.

Potential risks for the Proposal and how these might be mitigated

Public relations risk

- There is a risk that the public will not understand how the projects have been scoped or prioritised. Mitigation will include developing a proactive communication plan with the appropriate areas of the city, and including residents, elected representatives and stakeholders in that process.

Design and delivery risk

- There is a risk that resources are not readily available to undertake the required work. To mitigate this a dedicated project team will be established within Council.
- There is a risk that the design phase will take longer than estimated. Mitigation will include a management structure to guide the project.

	Precedent ▪ The CRAF is specific to the Christchurch Earthquakes of 2010/11. As demonstrated in earlier sections of this investment proposal the proposed improvement projects have a direct link to Christchurch regeneration outcomes. In addition, the proposed investment does not predominately or solely relate to renewing, repairing or maintaining existing roading, or other business as usual local authority responsibilities for roading.

Statutory or regulatory implications	Not applicable.

Management arrangements	The Head of Transport at Christchurch City Council (Richard Osborne) will be responsible for oversight of this project. A project team will be established to resource the work along with a management structure to guide the project, provide line of sight to Senior Management and involve wider stakeholders, including the key investment partners. Governance oversight and performance management for delivery will occur through Christchurch City Council's existing organisational and reporting structure.

Key project milestones

Date	Milestone
29/03/2019	Submit investment proposal for approval
31/05/2019	Approval to proceed with full business case
28/06/2019	Complete full business case
30/06/2020	Complete design for all interventions
30/06/2023	Complete construction

Prioritisation Criteria

Public Benefit

Community wellness and resilience	The proposal seeks to address community issues identified through the Long Term Plan, annual Life in Christchurch: Transport Survey and recent consultation processes. These recent surveys and community engagement exercises have all identified ongoing levels of dissatisfaction with the transport system. Addressing these issues will contribute towards improved public perception, community wellbeing and liveability of the city. Christchurch City Council has placed an emphasis on improving transport safety by investing in improvements to local roads, including speed management and primary safe system treatments to deliver a system increasingly free of death and serious injury.	High

	The proposed improvements will enhance actual and perceived safety around public and active modes. Supporting mode shift from single occupant private vehicles to more efficient, low cost modes like walking, cycling and public transport will also improve liveability of the community, access to key services, health outcomes and increase social interaction. Mental health and community wellbeing is also a key focus of the Council and Government. The Christchurch earthquake sequence had widespread mental health effects on the population. Research following the Christchurch earthquakes has shown that increasing exposure to the damage and trauma of a natural disaster is correlated with an increase in depression, anxiety, and post-traumatic stress disorder (PTSD).	

Environmental	The proposed transport improvements will provide opportunities to improve environmental outcomes by application of pragmatic treatment methods. The proposal prioritises public transport, which will accelerate the reduction of greenhouse gas emissions and supports a mode shift to lower emission forms of transport, including walking, cycling, public transport, carpooling and lower emission vehicles. Christchurch City Council also recognises the public health benefits of reducing harmful transport emissions and increasing uptake of walking and cycling and the importance of urban form for creating liveable cities that value public space and improve access for local communities.	Medium

Economic	Economic benefits to Christchurch are seen in providing a safe, reliable and accessible transport system. The proposed improvements will help local residents and businesses to access opportunities for employment, business development, training and education which will contribute towards economic growth. The investment into low cost alternative modes of transport (cycling, walking and public transport) will also ensure all levels of society are given equal opportunities to access commercial, educational and employment activities. Economic benefits can also be realised through the individual improvements to travel time and the reduction in vehicle operating costs. Road safety improvements will also contribute towards a reduction in accident costs.	High

Regeneration

Rebuild	The Canterbury earthquake sequence caused significant disruption to business and residential areas in Christchurch and nearby towns. There has been a short term loss of between 10,000 and 20,000 dwellings in metropolitan Greater Christchurch, including a relatively high proportion of the more affordable housing, including social housing units and rental accommodation. Relocation of residents and an influx of recovery workers contributed to a high demand for housing of all kinds. Communities have also suffered from damage to local centres and community facilities.	High

	Travel patterns for both people and freight have changed. To make a meaningful and noticeable improvement to the transport system, additional financial investment over and above what would be considered a normal level of funding is required. This reflects the extra-ordinary impacts and disruption caused by the 2010/11 earthquakes. This proposal directly contributes to improving the transport system, particularly in the areas that experienced significant damage and disruption as a result of the earthquakes. Successful residential and business recovery will foster a vibrant urban environment for people to enjoy. Investment in the transport improvements will assist residents to rebuild existing communities; develop new communities; assist Council to meet the land use needs of businesses and develop the necessary long term infrastructure needed to support these activities.	

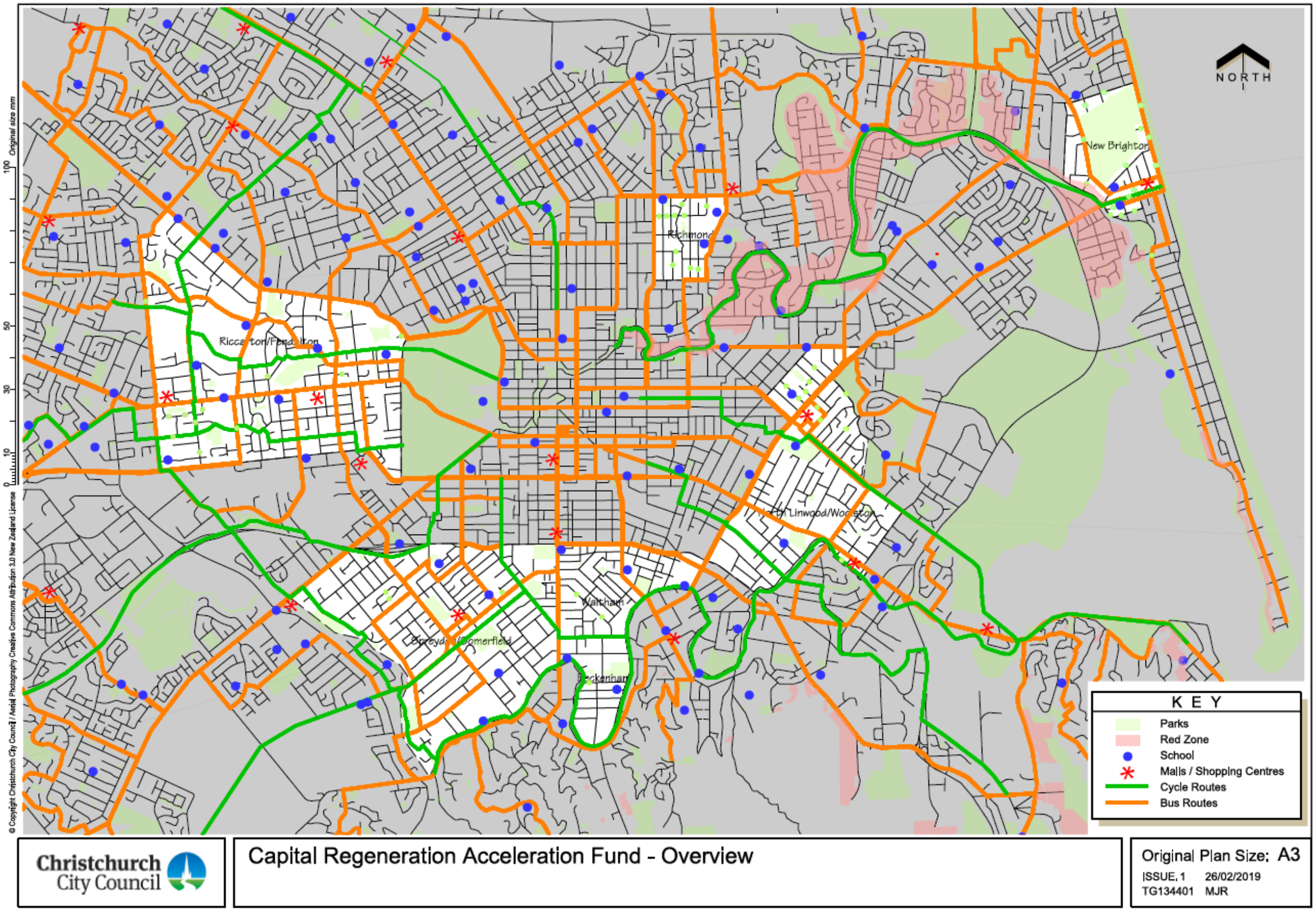
Catalyse and Stimulate	While there are limited direct investment opportunities in the transport improvement proposal, ensuring that a well-connected, liveable city is achieved will help increase investor confidence, retain and attract people to live, work and visit Christchurch.	Low

Acceleration

Advance Delivery	Christchurch City Council has recently approved the 2018-28 Long Term Plan. The Long Term Plan was extensively consulted on and sets out priorities for the next ten years. This proposal will allow Council to visibly accelerate delivery of improvement projects that are critical to the regeneration of the city. The proposal will also allow the Council to respond to wider post-earthquake pressures such as population/traffic growth, the heavy reliance on private vehicles, changing land use patterns and the need to adapt to meet community needs. The funding assistance from the CRAF will significantly assist Council to secure the local share required to deliver the total proposal and achieve the desired benefits. Additional funding will be sought from the NZ Transport Agency through the National Land Transport Plan potentially allowing for the delivery of further improvement projects to be accelerated.	High

Local Responsibility	Completing the proposed works will show a positive response to the local communities' feedback provided through the Long Term Plan, Council engagement processes and surveys. This positive and timely response to the communities' feedback reinforces local involvement in decision making. Consultation with communities and local stakeholders, including actively engaging with groups who have a diverse range of interests, will be a priority and further support future decision making. In support of building local capacity and capability, Council will develop internal teams to deliver the desired outcomes and is open to delivering this proposal through innovative consultant and contractor procurement. This will bring together the necessary skills to deliver the proposal in a seamless manner. Council intends to engage early with the consulting and contracting industry to advise them of the programme size and seek their early input to the engagement process.	Medium

Attachment 1: Five Proposed Areas



Christchurch City Council

Capital Regeneration Acceleration Fund - Overview

Original Plan Size: A3

ISSUE, 1 26/02/2019

TG134401 MJR

Appendix A to the template – definitions

Category 1: Residential red zone

To meet the Category 1 eligibility criteria, projects must be located in (or predominantly in) the geographically defined residential red zone in (and only in) Christchurch City, and not be inconsistent with the eligibility approach to Category 3.

Category 2: Stadium

To meet the Category 2 eligibility criterion, investment proposals must be a contributing component of the stadium project.

Category 3: Three waters, land drainage, and roading

To meet the Category 3 eligibility criterion, projects must be (*i*) related to three waters (drinking water, storm water, waste water), land drainage, or roading; (*ii*) consistent with wider central government policy (for example, with regard to wider emergency management policy and practice regarding essential infrastructure); and

Three waters and land drainage

- must have direct links to Christchurch earthquake regeneration outcomes; and
- must be for new three waters or land drainage infrastructure; and
- cannot be related to renewing, repairing, improving, operating, or maintaining existing three waters or land drainage infrastructure, or other business as usual local authority responsibilities for three waters and land drainage

Roading

- must have significant direct links to Christchurch earthquake regeneration outcomes, particularly as set out in *An Accessible City*; and
- cannot be predominantly or solely related to renewing, repairing, or maintaining existing roading, or other business as usual local authority responsibilities for roading

Category 4: Other

To meet the other eligibility criterion, projects must be compelling, and the Council must agree that funds made available for projects in this Category will reduce the amounts of funds made available in Categories 1 – 3

Appendix B Workshop Participants

Memorandum

14/03/2019

To	Christchurch City Council	Ref. No.	12504153
From	GHD		
cc			

Subject **Christchurch Regeneration Acceleration Facility: Investment Logic Mapping Workshop**

1. Introduction

The Christchurch Regeneration Acceleration Facility (CRAF) Investment Logic Mapping workshop took place on Friday 1st March 2019 at the Aurecon Christchurch Office. Representatives from Christchurch City Council (CCC or the Council), New Zealand Treasury, New Zealand Transport Agency (NZTA), and Department of the Prime Minister and Cabinet (DPMC) attended and participated in this workshop. The NZ Treasury and DPMC are also collectively referred to as the Crown in this memo.

A list of workshop participants and their organisations is shown in Table 1.

Table 1 Christchurch Regeneration Acceleration Fund ILM Workshop Attendance List

Attendee	Organisation
Richard Osborne	Christchurch City Council
Cllr Pauline Cotter	Christchurch City Council
Cllr Mike Davidson	Christchurch City Council
Lynette Ellis	Christchurch City Council
John Beaglehole	NZ Treasury
Andrew Washington	NZ Transport Agency
Mark Weeds	NZ Transport Agency
Peter Martin	Department of the Prime Minister and Cabinet

2. Background discussion

The Canterbury Earthquake sequence from September 2010 caused significant damage to the infrastructure of Christchurch city.

To assist in the regeneration of Christchurch, the government announced $300 million of additional capital acceleration funding in May 2018 to speed up the delivery of important regeneration projects. This enabled CCC to apply for capital investment through the fund to complete those projects beyond the arrangements already fully dealt with in the Cost Sharing Agreement with the Crown.[1]

As part of the CRAF, $40 million has been allocated to transport network improvements which was the subject of this Investment Logic Mapping (ILM) workshop. Prior to the facilitated ILM workshop process, the stakeholders conducted a round-table discussion in order to work towards a commonality of understanding relating to the transport network improvements allocation of the CRAF. Key points from this discussion are noted below:

- The stakeholders noted that the roading criteria and achieving a certain condition/ standard of roading infrastructure in Christchurch is significantly linked to earthquake regeneration outcomes. Evidence of this can be found in An Accessible City- the Christchurch Central Recovery Plan.
- Council representatives stated that the urgent roading infrastructure need in Christchurch is to do with roading maintenance. The quality of some transport assets in Christchurch are poor and some assets are likely to fail in the near future. This has been driven by events outside of stakeholder control such as the unanticipated redirection of transport due to land use changes as a result of the earthquake, and heavy vehicles travelling via new routes as a result of traffic redirections associated with drainage repairs.
- Recent customer insights surveys in Christchurch support the roading asset condition as being the most important issue impacting residents.
- Council would like to use the CRAF roading share to prioritise the urgent maintenance works required in the transport network. Council noted it is important for them to make funding decisions based on need and not on the funding that is available in specific activity classes. However it is desirable to maximise the funding available including the NZ Transport Agency share to have the largest positive impact on the transport network and Christchurch's people.
- The Crown and NZ Transport Agency representatives understand the situation and the need for investment in the Christchurch transport network. However each expressed concerns around the CRAF funding being used to fund activities that are considered business-as-usual (i.e. local authorities roading maintenance responsibilities).
    - The Crown raised concerns around the perception of additional Crown regeneration funding being used to pay for maintenance roading works and that it will represent a precedent risk for the Crown
    - The NZ Transport Agency expressed similar precedent risk concerns to the Crown. An independent commissions report has been issued, which Christchurch City is a signatory of, that states that all horizontal infrastructure repair requirements have been met post-earthquake
- The following question was then posed to the stakeholder group:

    "how can we free up the maximum funding available for roading infrastructure works (including NZ Transport Agency share) that meets the most pressing needs of Christchurch residents and the local economy, while satisfying the Crown and NZ Transport Agency risk appetite and concerns"?

[1] https://www.beehive.govt.nz/release/delivering-canterbury

- The NZ Transport Agency explained that they currently have financial constraints in some activity classes, and are unlikely to be able to support additional spend on any road maintenance activities. Enhanced FAR of 75% can however be accessed by the Council if the investment falls into other priority activity classes such as safety and enhancing travel mode choices such as walking and cycling and public transport improvements. In essence, $40m of CRAF roading infrastructure funding could potentially become $160m with enhanced FAR of 75% utilised if the investment falls into those activity class the NZ Transport Agency are prioritising. This would mean the additional funds saved by Council could then be used to satisfy Christchurch's road maintenance requirements.
- There was an understanding amongst stakeholders to try and achieve the greatest amount of funding possible to support and enhance Christchurch City's transport network.

3. Investment logic mapping

GHD Advisory were commissioned by CCC to facilitate an investment logic mapping (ILM) workshop. The goal of this session was for the stakeholder group to work together to identify the key problems facing the Christchurch transport network and the benefits sought by stakeholders from investing to address these problems.

During the ILM workshop and stakeholder discussion, common problem themes and contributing factors were identified by stakeholders and described as:

- The Canterbury Earthquake sequence caused significant roading and other infrastructure damage and created the need for investment (a Council observer noted some transport assets are of poor quality in some areas of Christchurch due to the earthquake sequence and its subsequent effects, and the prioritisation and scale of repair works undertaken)
- Single occupancy vehicle dependences following the earthquakes and associated rapid land use change, has resulted in limited travel choice options in some areas of Christchurch
- The NZ Transport Agency described some safety issues and low public transport patronage as ongoing problems relating to land use changes

Further information detailing the problems and their contributing factors can be found in the draft Problem Trajectory in Appendix A.

The draft Investment Logic Map demonstrating the draft problem and benefit statement developed for this project is outlined in Appendix B.

4. Next steps

The stakeholder group agreed that Christchurch City Council would draft a revised investment proposal document for further consideration. The revised proposal will demonstrate greater alignment with NZ Transport Agency priority activity classes and TEFAR investment criteria. This will include the removal of references to maintenance, renewal or repair works and an increased focus on safety, inclusive access and enhancing travel mode choice.

Appendix C Report Cards

LINWOOD-WOOLSTON AREA

ROADING & TRANSPORT REPORT CARD 2019

2019 CRAF

The residential suburbs of Linwood and Woolston are situated to the east and south-east of the city centre. The Heathcote River flows through the suburb of Woolston.

OVERALL GRADE

ACCESS

SAFETY

ASSET CONDITION

WHAT MAKES UP THIS GRADE?

Overall grade is made up of three indicators:

Access: Average of five sub-indicators which reflect the place and movement function of the corridors within the study area.

Safety: Average of six sub-indicators that indicate the collective and personal risk of the corridor and the number of crashes over the past five years (2013-2018) by severity (fatal, serious, minor and non-injury).

Asset Condition: A single indicator that has been developed following detailed condition audits of the corridors. The indicator identifies the priority for treatment and is based on sub criteria including condition audits and the scope of works required.

Note: This report card only includes an assessment of the corridors in the study area which have been identified as requiring roading and transport improvements.

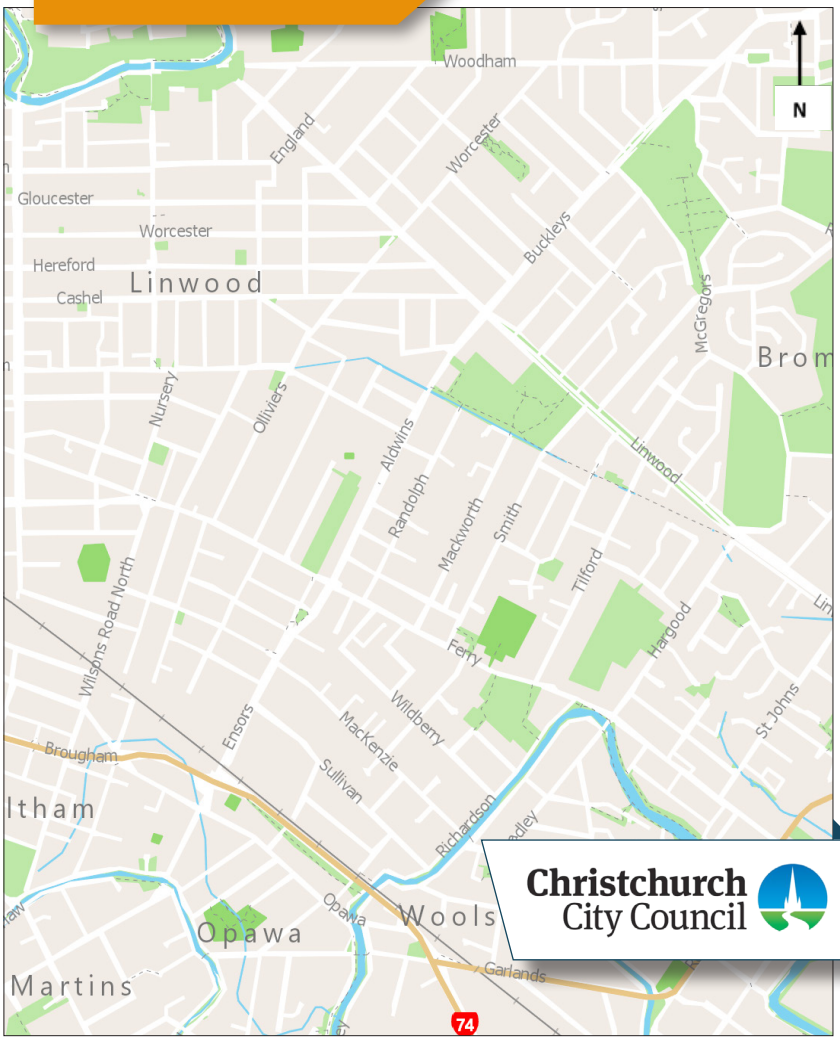
QUICK FACTS

The population of the Linwood-Woolston area is approximately **14,500 people,** there are a number of schools, parks and commercial areas located in both suburbs. The suburbs are located in the Linwood Ward.

The **Orbiter** and **Yellow** Line core bus routes travel through Linwood and the **Purple** Line travels through Woolston.

65% of Linwood Ward residents are dissatisfied with the condition of roads. Residents have also raised issues with wayfinding and road layouts.

LINWOOD-WOOLSTON AREA



Christchurch City Council

ACCESS

Land Use in the Linwood-Woolston area is predominantly zoned residential with several community parks and schools (purple shaded areas). There are also industrial areas located to the northeast of the study area and pockets of commercial activity in both Linwood and Woolston centres.

ZONE

- Commercial Core Zone
- Commercial Local Zone
- Industrial General Zone
- Open Space Community Parks Zone
- Open Space Water & Margins Zone
- Residential Medium Density Zone
- Residential Suburban Zone
- Residential Suburban Density Transition Zone
- Specific Purpose (Flat Land Recovery) Zone
- Specific Purpose (School) Zone
- Transport Zone

Public Transport: The suburbs are well connected by public transport with three core bus routes servicing the area. The Orbiter service (Or) provides connections around the perimeter of the Central City to the north of the study area.

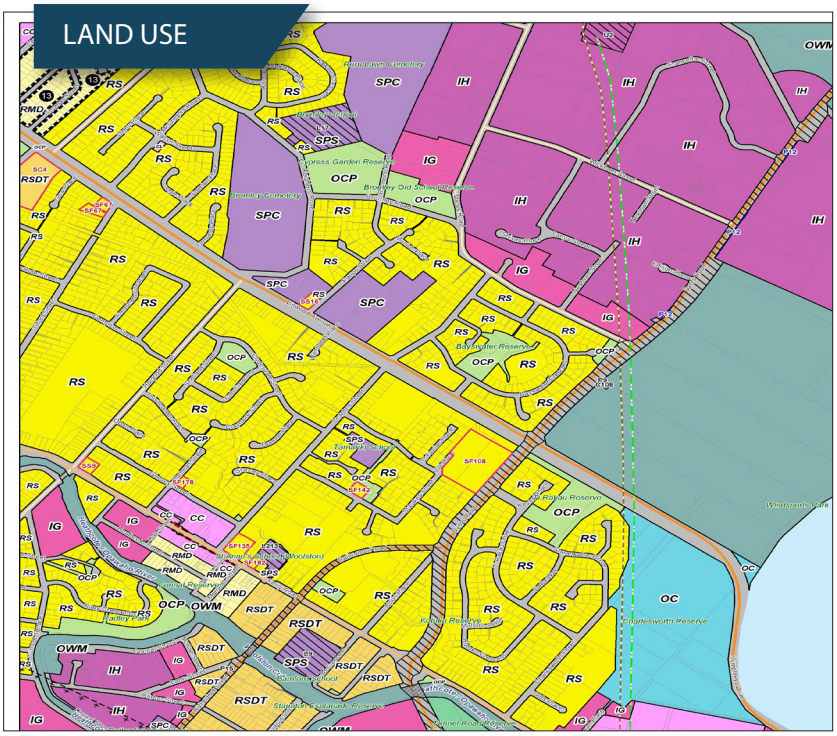
The Yellow Line (Y) links the southwest suburbs of Rolleston and Hornby with the Central City, Linwood and New Brighton. The Yellow Line operates along Linwood Avenue and Buckleys Road in the study area.

The Purple Line (P) connects the Airport and University to the West with Sumner to the southeast. The Purple Line operates along Ferry Road in the study area.

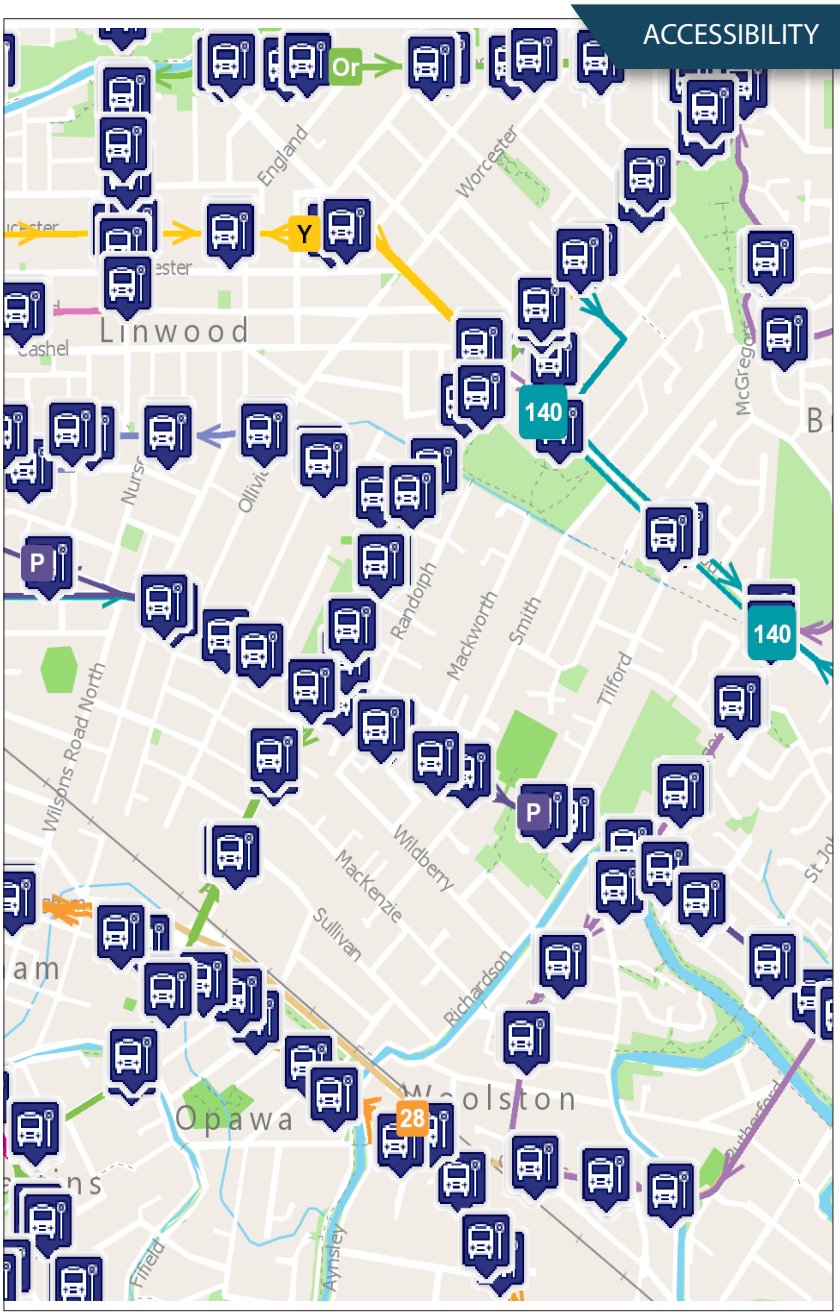
Route number 140 connects Hornby-Linwood and Mount Pleasant. Route number 155 connects Eastgate Mall with Lyttleton and Route number 28 connects Casebrook in the north with Lyttleton.

Cycle Routes: Both the Rapanui-Shag Rock and the Heathcote Expressway Major Cycle Routes traverse through the area, providing a high quality cycle connection to the Central City. Cycle infrastructure is also provided on Ferry Road and Linwood Avenue.

LAND USE



ACCESSIBILITY



SAFETY

Collective Risk is a measure of the total number of fatal and serious injury crashes per kilometre over a section of road.

The majority of roads in Linwood and Woolston have a low collective risk rating. Parts of Ferry Road have a medium-high and high collective risk rating.

Personal Risk is a measure of the danger to each individual using the road being assessed. Personal risk takes into account the traffic volumes on each section of road and shows the likelihood of a driver or rider, on average, being involved in a fatal or serious crash on a particular stretch of road.

Several roads in the Linwood and Woolston area have a medium-high personal risk rating, including Smith Street, Jollie Street and Mackworth Street, as shown in the personal risk map opposite.

Crashes: Four fatal crashes have occurred in the past five year period (2014-2018) as shown in the Crash Analysis System map opposite and detailed below, there have also been 61 serious injury crashes.

Aldwins Road

The fatal crash on Aldwins Road occurred at the intersection with Edmond Street and involved a motorcycle hitting a car U-turning from the opposite direction of travel.

Radley Street

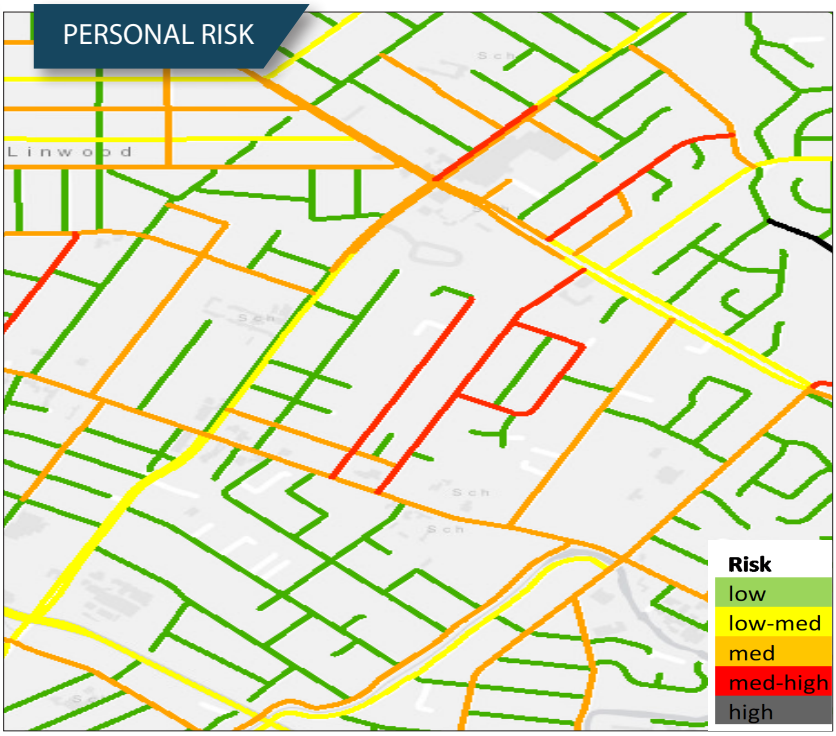
The fatal crash on Radley Street occurred at the intersection with Ashmole Street and involved a motorcycle loosing control whilst overtaking and hitting a parked car.

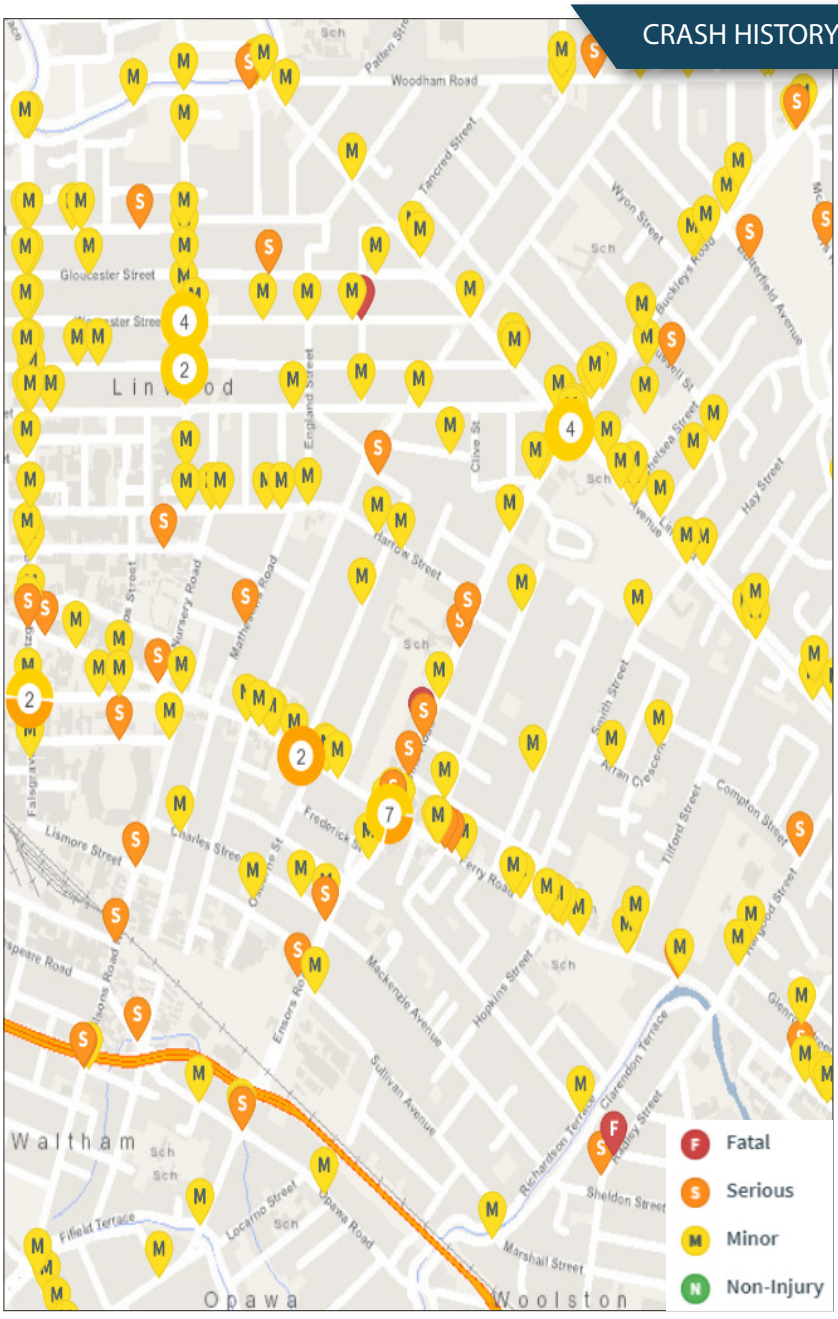
Tuam Street

The fatal crash on Tuam Street occurred in the vicinity of the intersection with Stanmore Road and involved a van turning right hitting a pedestrian crossing the side road.

Worcester Street

The fatal crash on Worcester Street occurred at the intersection with Tancred Street and involved a car hitting a car turning right.





CONDITION

Customer Insights: Data from the 2018 Life in Christchurch Transport survey shows that respondents from the Linwood and Woolston area expressed frustration with the poor quality of some road surfaces and the time taken for repairs to be completed. Linwood and Woolston residents also highlighted issues with road layout, wayfinding and traffic signals, as highlighted by the following responses from customers:

"I sometimes tow my child in a cycle trailer but uneven road surfaces can make that a really uncomfortable ride for him".

"I am very sad about the condition of our roads and footpaths, this is a core job for the Council and we are failing".

"I love the new cycleways, keep working on them and get them finished please".

Condition Data: As shown in the condition map opposite many of the roads and footpaths in the Linwood and Woolston study area are classified as being in a very poor condition.

An audit of these roads has identified a number of common issues related to the asset condition including:

- Old, narrow and very tired footpaths
- Trenching and manhole issues
- Carriageway roughness

To address these problems the transport engineer has recommended boundary to boundary rebuild of many of these roads.

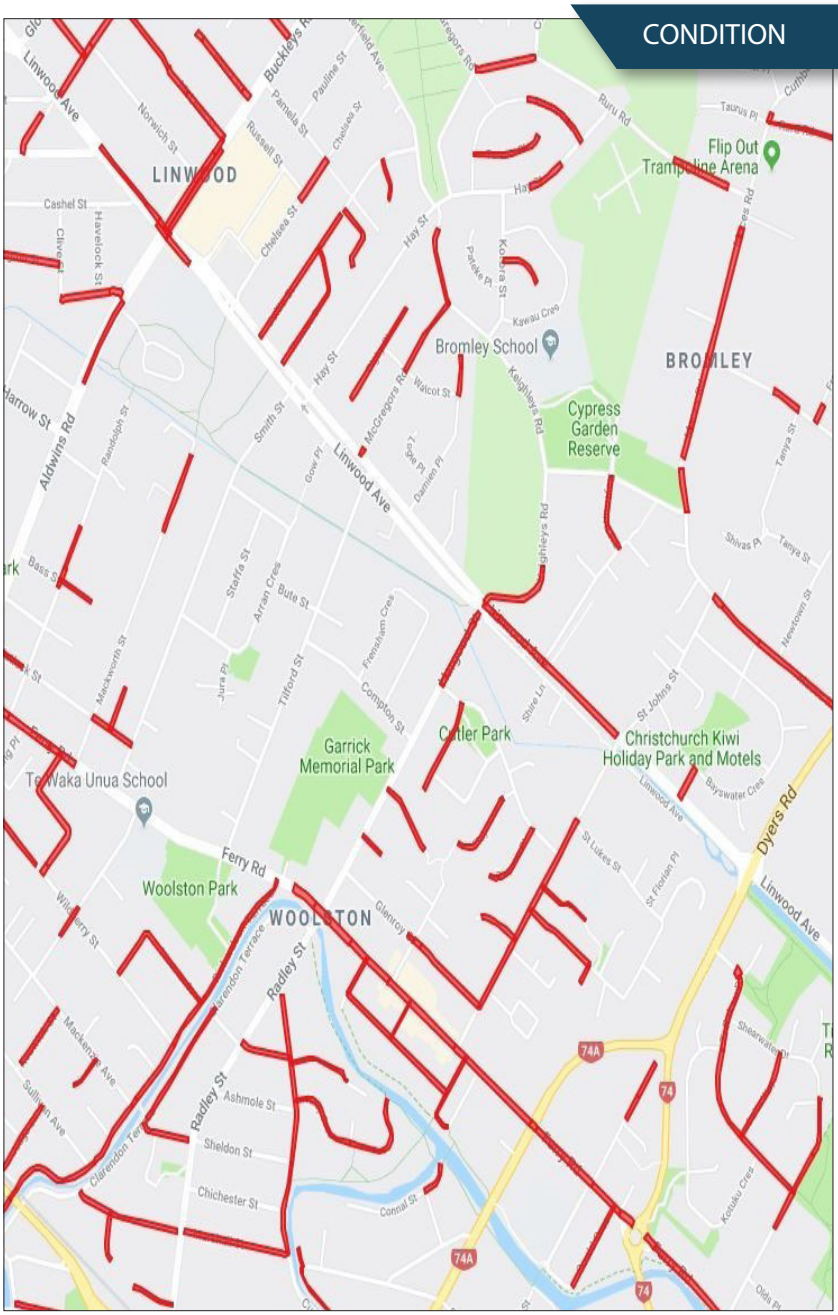
Opportunities to narrow some of the roads have also been identified to improve safety and accessibility outcomes.

INSIGHTS

Christchurch the pothole capital of New Zealand

Jonathan Guildford • 15:27, Feb 04 2018

CONDITION



PRIORITISATION

RANKING

Multi-Criteria Analysis: Overall grade is made up of three indicators:

Access: Average of five sub-indicators which reflect the place and movement function of the corridors within the study area.

Safety: Average of six sub-indicators that indicate the collective and personal risk of the corridor and the number of crashes over the past five years (2013-2018) by severity (fatal, serious, minor and non-injury).

Asset Condition: A single indicator that has been developed following detailed condition audits of the corridors. The indicator identifies the priority for treatment and is based on sub criteria including condition audits and the scope of works required.

QUICK WINS

The Christchurch Regeneration Acceleration Facility roading and transport improvements will transform the transport system, making it safer, more accessible and will improve asset condition and value for money, which in turn will support the ongoing regeneration of the city. However, while these works are planned, scoped and developed, the people using the local transport system still expect to see improvements. For this reason the business case has identified a number of 'quick wins'.

We define 'quick wins' as strong candidates for prioritisation, these are projects that can deliver real economic, social and environmental benefits to residents in a short period of time. The 'quick wins' identified below represent low cost and low risk improvements that can be made to improve access, safety and condition outcomes.

In many cases the 'quick wins' solution may be all that is required to address the issues identified. In other cases the 'quick wins' provide a level of improvement, prior to more significant investment at a later stage as highlighted on the next page.

Priority	Street	From	To	Access	Safety	Condition	Year	Cost	Cumulative
1	Hay Street	Linwood Avenue	McGregors Road	🟢	🟡	🔴	0-3	$125,000	$125,000
2	Kerrs Road	Buckleys Road	Woodham Road	🟡	🟢	🔴	0-3	$10,000	$135,000
3	Dacre Street	Worcester Street	Buckleys Road	🟢	🟢	🔴	0-3	$165,000	$300,000
4	Heathcote Street	Ferry Road	Catherine Street	🟢	🟢	🔴	0-3	$85,000	$385,000
5	Hulbert Street	Wyon Street	End	🟢	🟢	🔴	0-3	$73,000	$458,000
6	Wyon Street	Hulbert Street/MH	Buckleys Road	🟢	🟢	🔴	0-3	$70,000	$528,000
7	Smith Street	Ferry Road	Matlock Street	🟢	🔴	🟡	3-6	$25,000	$553,000
8	Richardson Tce	Ferry Road	Opawa Road	🟢	🟡	🟡	6-10	$210,000	$763,000
9	Catherine Street	Ferry Road	Maonan Street	🟢	🟢	🟡	3-6	$40,000	$803,000
10	Dampier Street	Ferry Road	Wildberry Street	🟢	🟢	🟡	3-6	$60,000	$863,000
11	Maronan Street	Ferry Road	Catherine Street	🟢	🟢	🟡	3-6	$20,000	$883,000
12	Oak Street	Ferry Road	Heathcote Street	🟢	🟢	🟡	3-6	$20,000	$903,000
13	Pamela Street	Buckleys Road	Chelsea Street	🟢	🟢	🟡	3-6	$35,000	$938,000
14	Silvester Street	Wildberry Street	Richardson Terrace	🟢	🟢	🟡	6-10	$45,000	$983,000
								$983,000	

🔴 High 🟡 Medium 🟢 Low

PRIORITISATION

RANKING

Multi-Criteria Analysis: Overall grade is made up of three indicators:

Access: Average of five sub-indicators which reflect the place and movement function of the corridors within the study area.

Safety: Average of six sub-indicators that indicate the collective and personal risk of the corridor and the number of crashes over the past five years (2013-2018) by severity (fatal, serious, minor and non-injury).

Asset Condition: A single indicator that has been developed following detailed condition audits of the corridors. The indicator identifies the priority for treatment and is based on sub criteria including condition audits and the scope of works required.

First column identifies 'quick wins' that require further investment to resolve all of the issues identified.
Red line indicates the extent of CRAF investment (recommended option).

PRIORITY AREAS

Priority		Street	From	To	Access	Safety	Condition	Cost	Cumulative
	15	Woodham Road	Worcester Street	Pages Road				$50,000	$1,033,000
	16	Jollie Street	Linwood Avenue	Butterfield Ave				$91,000	$1,124,000
	17	Russell Street	Buckleys Road	Chelsea Street				$300,000	$1,424,000
	18	McGregors Road	Linwood Avenue	Hay Street				$20,000	$1,444,000
	19	Rhona Street	Buckleys Road	End				$69,000	$1,513,000
	20	Canarvan Street	Buckleys Road	Bend				$54,000	$1,567,000
	21	Carnarvon Street	Bend	Woodham Road				$41,000	$1,608,000
4	22	Heathcote Street	Ferry Road	Catherine Street				$2,000,000	$3,608,000
	23	McLean Street	No 32/36 RHS	Buckleys Road				$90,000	$3,698,000
	24	McLean Street	Worcester Street	No 32/36 RHS				$62,500	$3,760,500
	25	Norwich Street	Worcester Street	Buckleys Road				$220,000	$3,980,500
	26	Thomas Street	Linwood Avenue	Jollie Street				$60,000	$4,040,500
	27	Wildberry Street	Manning Place	Hopkins Street				$110,000	$4,150,500
	28	Worcester Street	Linwood Avenue	McLean Street				$180,000	$4,330,500
	29	Butterfield Avenue	Buckleys Road	Hay Street				$273,000	$4,603,500
	30	Chelsea Street	Linwood Avenue	Pamela Street				$500,000	$5,103,500
1	31	Hay Street	Linwood Avenue	McGregors Road				$2,500,000	$7,603,500
8	32	Richardson Terrace	Ferry Road	Opawa Road				$1,800,000	$9,403,500
	33	Worcester Street	McLean Street	Surrey Street				$125,000	$9,528,500
9	34	Catherine Street	Ferry Road	Maronan Street				$210,000	$9,738,500
3	35	Dacre Street	Worcester Street	Buckleys Road				$2,300,000	$12,038,500
5	36	Hulbert Street	Wyon Street	End				$525,000	$12,563,500
14	37	Silvester Street	Wildberry Street	Richardson Tce				$1,760,000	$14,323,500
	38	Worcester Street	Surrey Street	Dacre Street				$280,000	$14,603,500
	39	Worcester Street	Dacre Street	Woodham Road				$200,000	$14,803,500
6	40	Wyon Street	Hulbert St/MH	Buckleys Road				$832,000	$15,635,500
	41	Wyon Street	Worcester Street	Hulbert St/MH				$1,550,000	$17,185,500
10	42	Dampier Street	Ferry Road	Wildberry Street				$1,810,000	$18,995,500
									$18,995,500

Note: The streets outlined in the programme are indicative, and based on high level cost estimates. The Council will only deliver what it can within the available budget, and indicative programme shown may be subject to change.

High Medium Low

Christchurch City Council

NEW BRIGHTON AREA

ROADING & TRANSPORT REPORT CARD 2019

2019 CRAF

New Brighton is a coastal suburb that is situated approximately 8 kilometres to the east of the city centre, the pier and scenic coastline are key attractions for the city.

OVERALL GRADE

ACCESS

SAFETY

ASSET CONDITION

WHAT MAKES UP THIS GRADE?

Overall grade is made up of three indicators:

Access: Average of five sub-indicators which reflect the place and movement function of the corridors within the study area.

Safety: Average of six sub-indicators that indicate the collective and personal risk of the corridor and the number of crashes over the past five years (2013-2018) by severity (fatal, serious, minor and non-injury).

Asset Condition: A single indicator that has been developed following detailed condition audits of the corridors. The indicator identifies the priority for treatment and is based on sub criteria including condition audits and the scope of works required.

Note: This report card only includes an assessment of the corridors in the study area which have been identified as requiring roading and transport improvements.

QUICK FACTS

The population of the New Brighton area is approximately **2,400 people,** there are two schools, a doctors surgery and a library located in the area. New Brighton is located in the Coastal Ward.

The **Yellow** core bus route travels through New Brighton and connects the suburb with the city centre, Hornby and Rolleston to the south-west.

81% of Coastal Ward residents who participated in the Life in Christchurch survey are dissatisfied with the condition of roads; the highest proportion across all Christchurch wards.

NEW BRIGHTON AREA

Christchurch City Council

ACCESS

Land Use in the New Brighton area is predominantly zoned residential with several community parks including the Rawhiti Municipal Golf Course. Rawhiti School is located to the north of the study area and New Brighton Catholic School to the south (purple shaded areas). The new Shirley Boys/Avonside Girls School is shown by the green hatched area to the west.

ZONE

- Commercial Core Zone
- Commercial Local Zone
- Industrial General Zone
- Open Space Community Parks Zone
- Open Space Water & Margins Zone
- Residential Medium Density Zone
- Residential Suburban Zone
- Residential Suburban Density Transition Zone
- Specific Purpose (Flat Land Recovery) Zone
- Specific Purpose (School) Zone
- Transport Zone

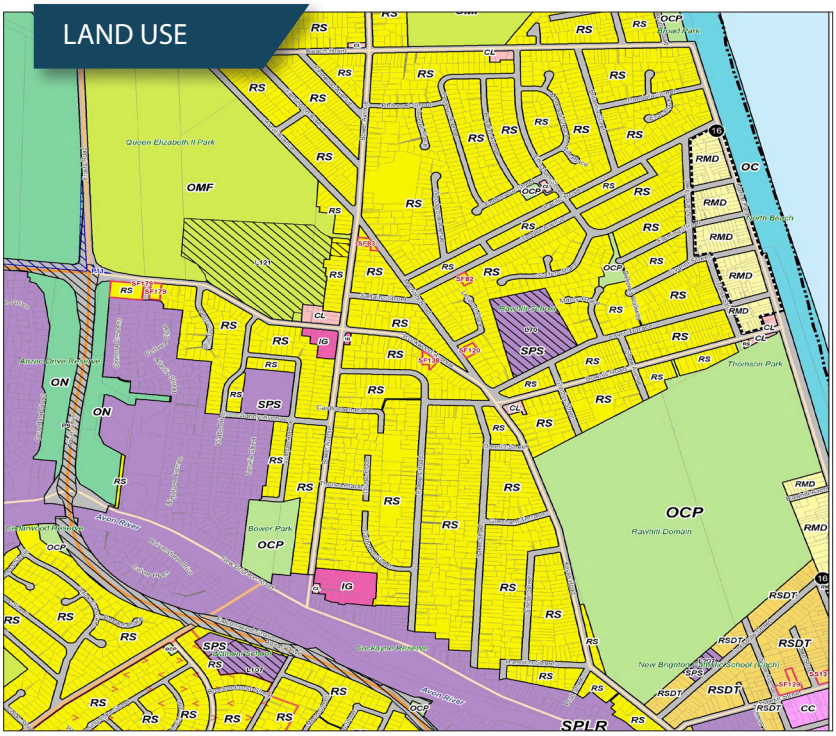
Public Transport: One core bus route services the New Brighton area. The Yellow Line (Y) provides connections to the Central City and south-west suburbs of Hornby and Rolleston. The Yellow Line has several stops along Seaview Road and Beresford Street, before it terminates on Oram Avenue.

Route number 135 connects New Brighton with QE2, Burwood Hospital, Prestons and The Palms. Route number 135 operates along Marine Parade in the study area.

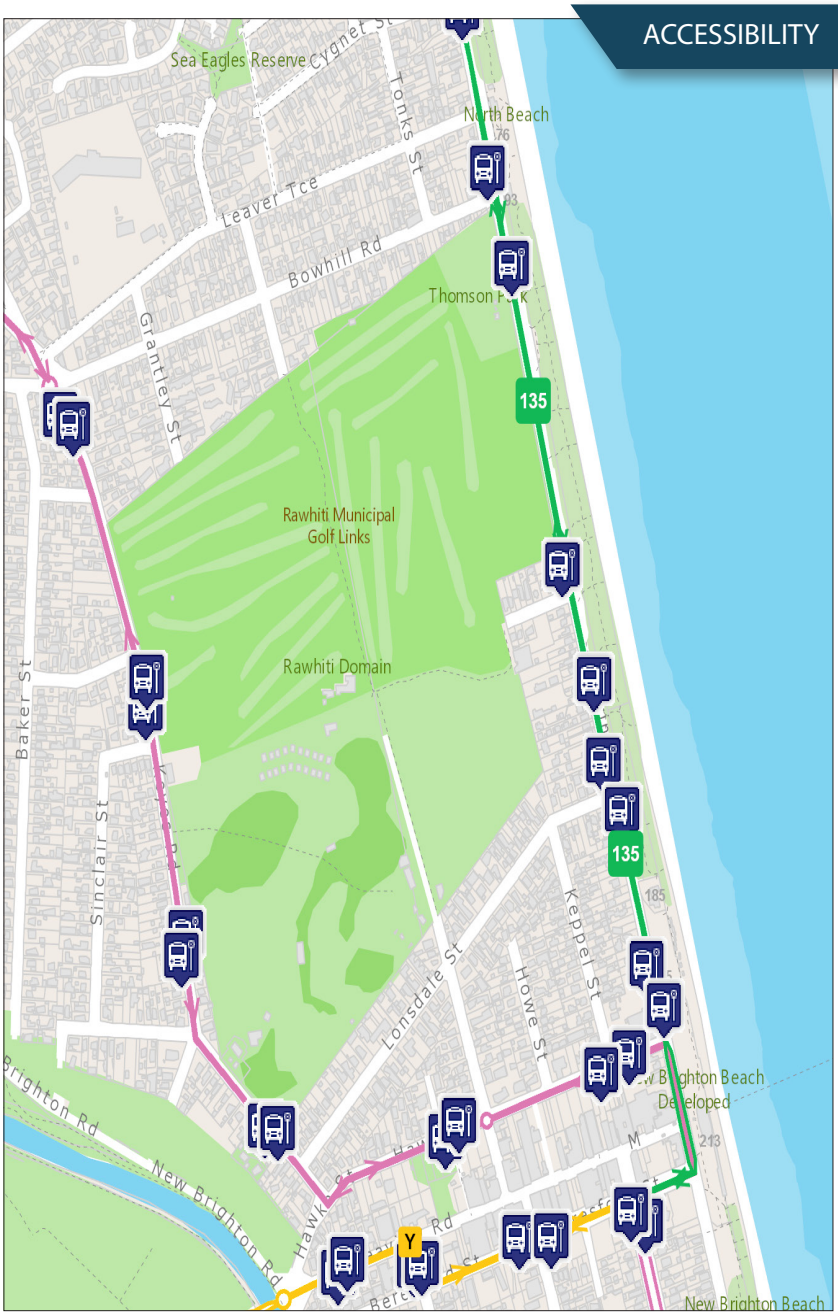
Route number 60 connects Southshore and New Brighton with the Central City and Spreydon and Wigram to the southwest. Route number 60 operates along Keyes Road and Hawke Street in the study area (pink route opposite).

Cycle Routes: There are no dedicated cycle facilities provided in the study area. The Te Ara Otakaro Avon River Trail is located on the perimeter of the study area adjacent to New Brighton Road.

LAND USE



ACCESSIBILITY



SAFETY

Collective Risk is a measure of the total number of fatal and serious injury crashes per kilometre over a section of road.

The majority of roads in New Brighton have a low or low-medium collective risk rating. Pages Road has a medium-high collective risk rating.

Personal Risk is a measure of the danger to each individual using the road being assessed. Personal risk takes into account the traffic volumes on each section of road and shows the likelihood of a driver or rider, on average, being involved in a fatal or serious crash on a particular stretch of road.

Bowhill Road is identified as a medium-high personal risk corridor. Several roads in the New Brighton area have a medium personal risk rating, including Seaview Road and Keyes Road, as shown opposite.

Crashes: A fatal crash occurred in June 2014 on Marine Parade involving a motorbike and a car turning right into a parking area. There have been four serious injury crashes as shown in the Crash Analysis System map opposite and detailed below.

Keyes Road

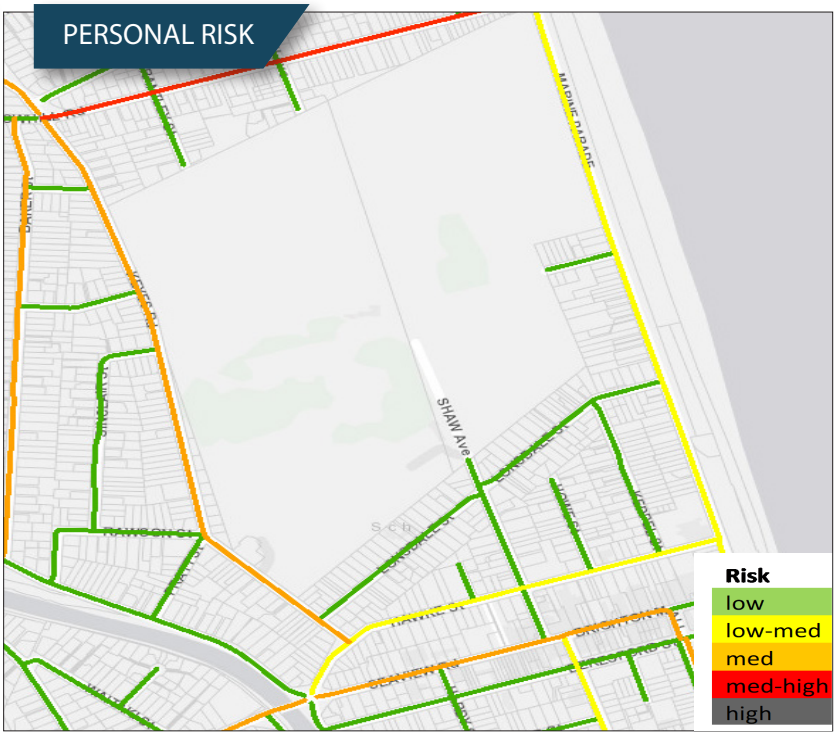
A serious injury crash on Keyes Road occurred at the intersection with Bowhill Road and involved a cyclist hitting a parked car. A second serious injury crash occurred at the intersection with Lonsdale Street and involved a car hitting a pedestrian crossing the road.

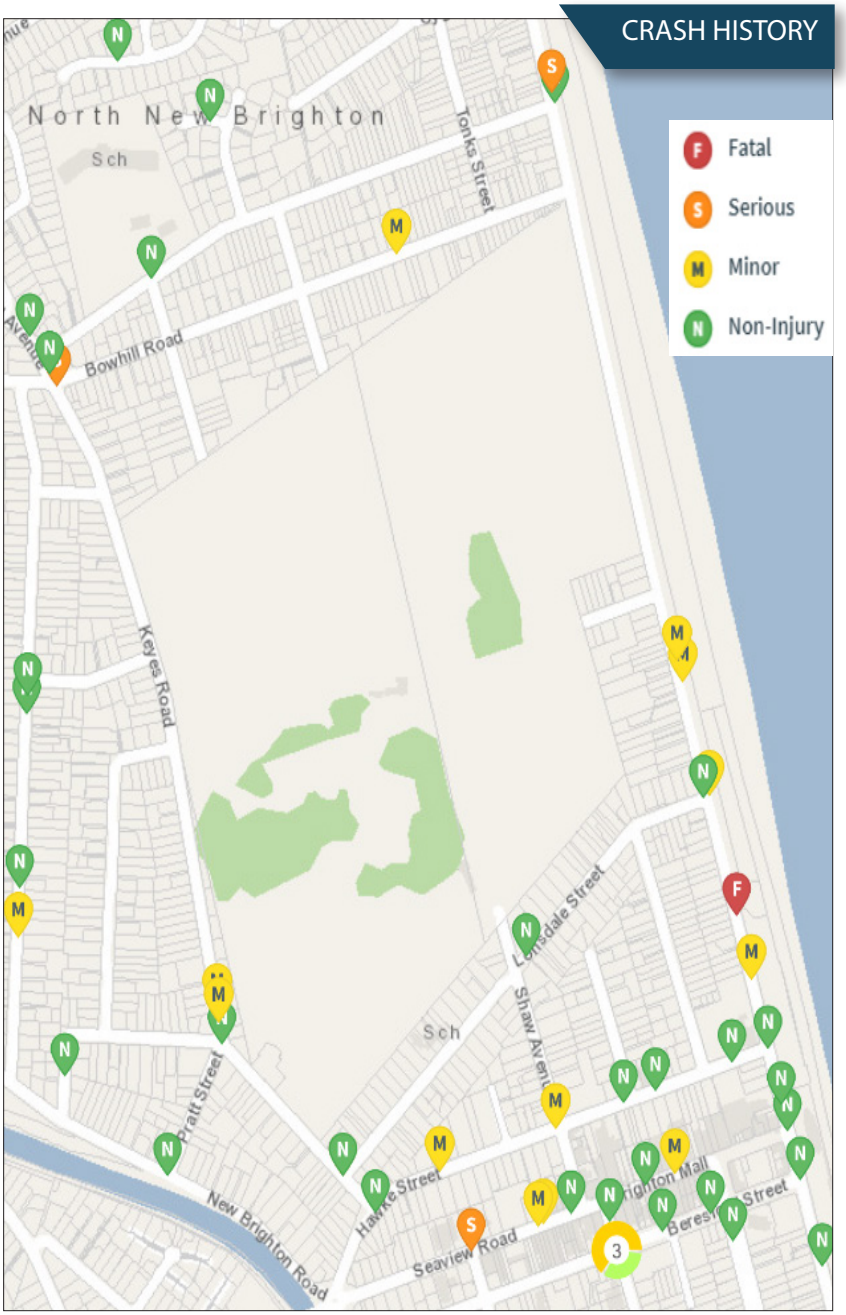
Marine Parade

The serious injury crash on Marine Parade occurred at the intersection with Leaver Terrace and involved a car hitting a parked vehicle.

Seaview Road

The serious injury crash on Seaview Road occurred at the intersection with Hardy Street and involved a car hitting a pedestrian crossing the road.





CONDITION

Customer Insights: Data from the 2018 Life in Christchurch Transport survey shows that respondents from the New Brighton area expressed frustration with the poor quality of some road surfaces and the time taken for repairs to be completed. Ongoing issues with the quality of the road surface, patch repairs and issues with the road layout were common issues raised as highlighted by the following responses from customers:

"It's time a permanent repair was undertaken, the potholes are filled and in less than a week they are back again".

"Many of the roads I travel by bike on have potholes, gravel etc. that make it unsafe, especially at night".

"So frustrating that the same potholes are reappearing shortly after a patch - why not fix it properly?"

Condition Data: As shown in the condition map opposite several of the roads and footpaths in the New Brighton study area are classified as being in a very poor condition.

Condition data includes an assessment of the carriageway surface, pavement integrity and road roughness.

An audit of these roads has identified a number of common issues related to the asset condition including:

- Carriageway uneven, rough ride
- Multiple patch repairs
- Resurfacing required to waterproof
- Pavement potholing

To address these problems the transport engineer has recommended resurfacing and minor improvements to many of these roads.

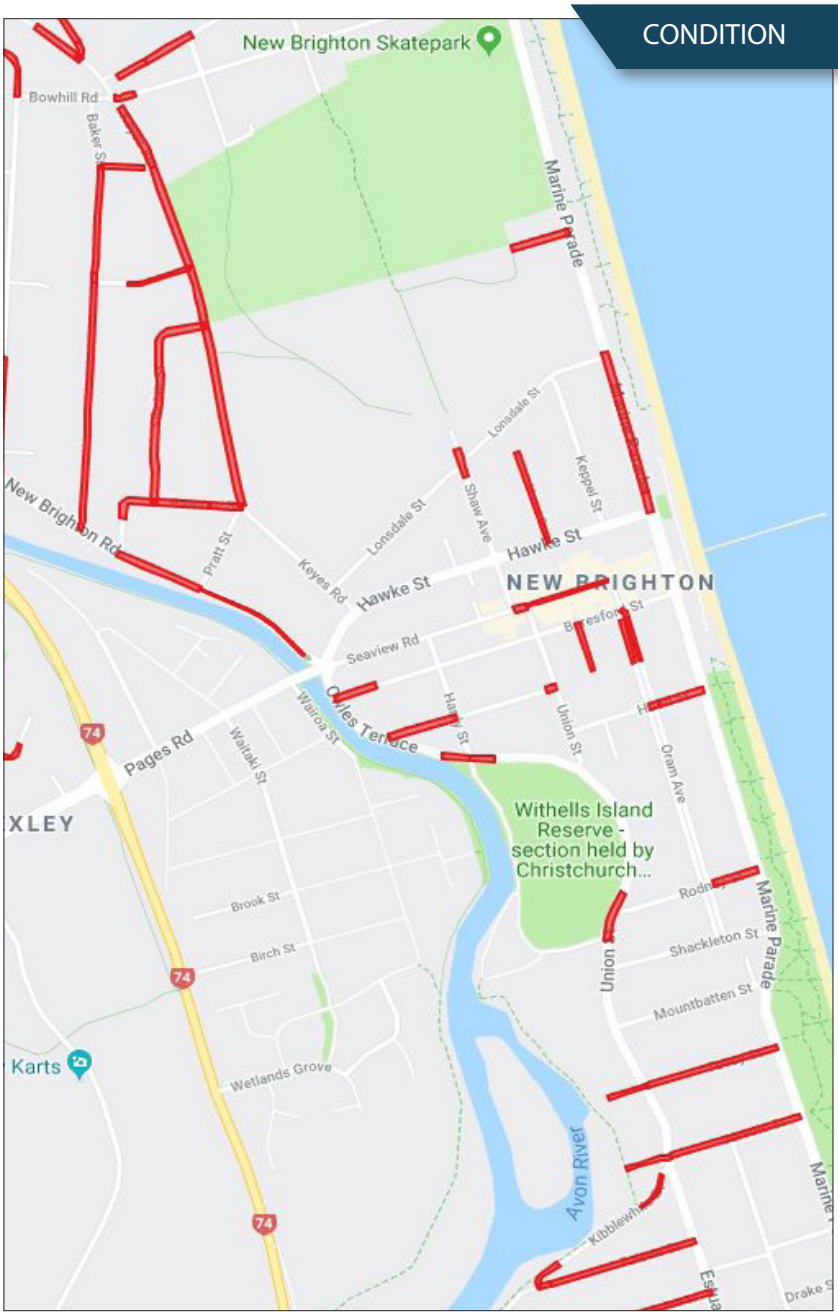
Opportunities to narrow some of the roads have also been identified to improve safety and accessibility outcomes.

INSIGHTS

Sumner, Lyttelton and New Brighton: Is Christchurch's regeneration too slow?

Tina Law • 17:31, Sep 16 2016

CONDITION



PRIORITISATION

RANKING

Multi-Criteria Analysis: Overall grade is made up of three indicators:

Access: Average of five sub-indicators which reflect the place and movement function of the corridors within the study area.

Safety: Average of six sub-indicators that indicate the collective and personal risk of the corridor and the number of crashes over the past five years (2013-2018) by severity (fatal, serious, minor and non-injury).

Asset Condition: A single indicator that has been developed following detailed condition audits of the corridors. The indicator identifies the priority for treatment and is based on sub criteria including condition audits and the scope of works required.

QUICK WINS

The Christchurch Regeneration Acceleration Facility roading and transport improvements will transform the transport system, making it safer, more accessible and will improve asset condition and value for money, which in turn will support the ongoing regeneration of the city. However, while these works are planned, scoped and developed, the people using the local transport system still expect to see improvements. For this reason the business case has identified a number of 'quick wins'.

We define 'quick wins' as strong candidates for prioritisation, these are projects that can deliver real economic, social and environmental benefits to residents in a short period of time. The 'quick wins' identified below represent low cost and low risk improvements that can be made to improve access, safety and condition outcomes.

In many cases the 'quick wins' solution may be all that is required to address the issues identified. In other cases the 'quick wins' provide a level of improvement, prior to more significant investment at a later stage as highlighted on the next page.

Priority	Street	From	To	Access	Safety	Condition	Cost	Cumulative
1	Baker Street	New Brighton Road	Bowhill Road				$56,250	$56,250
2	Brighton Mall	Union Street	Beresford Street				$12,500	$68,750
3	Beresford Street	Marine Parade	Oram Avenue				$25,000	$93,750
4	Beresford Street	Oram Avenue	Union Street				$31,250	$125,000
5	Hardy Street	Beresford Street	Seaview Road				$18,750	$143,750
6	New Brighton Road	Baker Street	Roundabout				$15,000	$158,750
7	Gresham Terrace	Baker Street	Keyes Road				$12,500	$171,250
8	Rawhiti Avenue	Marine Parade	End				$37,500	$208,750
9	Shaw Avenue	Bowhill Road	Rawhiti Domain				$18,750	$227,500
10	Shaw Avenue	Lonsdale Street	Rawhiti Domain				$25,000	$252,500
11	Shaw Avenue	Hawke Street	Seaview Road				$43,750	$296,250
12	Union Street	Collingwood Street	Beresford Street				$18,750	$315,000
13	Mafeking Street	Beresford Street	End				$25,000	$340,000
							$340,000	

High Medium Low

PRIORITISATION

RANKING

Multi-Criteria Analysis: Overall grade is made up of three indicators:

Access: Average of five sub-indicators which reflect the place and movement function of the corridors within the study area.

Safety: Average of six sub-indicators that indicate the collective and personal risk of the corridor and the number of crashes over the past five years (2013-2018) by severity (fatal, serious, minor and non-injury).

Asset Condition: A single indicator that has been developed following detailed condition audits of the corridors. The indicator identifies the priority for treatment and is based on sub criteria including condition audits and the scope of works required.

First column identifies 'quick wins' that require further investment to resolve all of the issues identified.
Red line indicates the extent of CRAF investment (recommended option).

PRIORITY AREAS

	Priority	Street	From	To	Access	Safety	Condition	Cost	Cumulative
	14	Keyes Road	Hawke Street	Bowhill Road	Medium	High	High	$375,000	$715,000
	15	Seaview Road	Hardy Street	Union Street	Medium	High	High	$37,500	$752,500
	17	Marine Parade	Hawke Street	Lonsdale Street	Medium	Medium	High	$312,500	$1,065,000
	18	Bowhill Road	Keyes Road	Marine Parade	Low	Medium	High	$100,000	$1,165,000
	16	Beresford Street	Hardy Street	Owles	High	Low	High	$93,750	$1,258,750
	19	Lonsdale Street	Keyes Road	Shaw Avenue	Medium	Low	High	$56,250	$1,315,000
	20	Seaview Road	Roundabout	Hardy Street	Medium	Low	High	$125,000	$1,440,000
	22	Collingwood Street	Owles Terrace	Hardy Street	Low	Low	High	$812,500	$2,252,500
	23	Lonsdale Street	Shaw Avenue	Keppel Street	Low	Low	High	$37,500	$2,290,000
	24	Owles Terrace	Beresford Street	Collingwood Street	Low	Low	High	$375,000	$2,665,000
	25	Owles Terrace	Roundabout	Beresford Street	Low	Low	High	$250,000	$2,915,000
	26	Pratt Street	Keyes Road	New Brighton Road	Low	Low	High	$875,000	$3,790,000
	27	Rawson Street	New Brighton Road	Keyes Road	Low	Low	High	$68,750	$3,858,750
	21	Marine Parade	Lonsdale Street	Rawhiti Avenue	Medium	Medium	Medium	$500,000	$4,358,750
	28	Beresford Street	Union Street	Hardy Street	Medium	Low	Medium	$81,250	$4,440,000
	29	Marine Parade	Rawhiti Avenue	Bowhill Road	Medium	Low	Medium	$93,750	$4,533,750
	30	Collingwood Street	Hardy Street	Union Street	Low	Low	Medium	$1,162,500	$5,696,250
	31	Dennitt Street	Keyes Road	Baker Street	Low	Low	Medium	$43,750	$5,740,000
	32	Grantley Street	Bowhill Road	Rawhiti Domain	Low	Low	Medium	$537,500	$6,277,500
10	33	Shaw Avenue	Lonsdale Street	Rawhiti Domain	Low	Low	Medium	$281,250	$6,558,750
	34	Shaw Avenue	Lonsdale Street	Hawke Street	Low	Low	Medium	$62,500	$6,621,250
	35	Sinclair Street	Keyes Road	Rawson Street	Low	Low	Medium	$56,250	$6,677,500
8	36	Rawhiti Avenue	Marine Parade	End	Low	Low	Low	$750,000	$7,427,500
								$7,427,500	

Note: The streets outlined in the programme are indicative, and based on high level cost estimates. The Council will only deliver what it can within the available budget, and indicative programme shown may be subject to change.

High Medium Low

Christchurch City Council

2019 CRAF

RICCARTON AREA

ROADING & TRANSPORT

REPORT CARD 2019

Situated west of the city centre, the area is bounded by Fendalton Road to the north, Blenheim Road to the south, Hagley Park to the east and Hansons Lane to the west.

OVERALL GRADE

ACCESS

SAFETY

ASSET CONDITION

WHAT MAKES UP THIS GRADE?

Overall grade is made up of three indicators:

Access: Average of five sub-indicators which reflect the place and movement function of the corridors within the study area.

Safety: Average of six sub-indicators that indicate the collective and personal risk of the corridor and the number of crashes over the past five years (2013-2018) by severity (fatal, serious, minor and non-injury).

Asset Condition: A single indicator that has been developed following detailed condition audits of the corridors. The indicator identifies the priority for treatment and is based on sub criteria including condition audits and the scope of works required.

Note: This report card only includes an assessment of the corridors in the study area which have been identified as requiring roading and transport improvements.

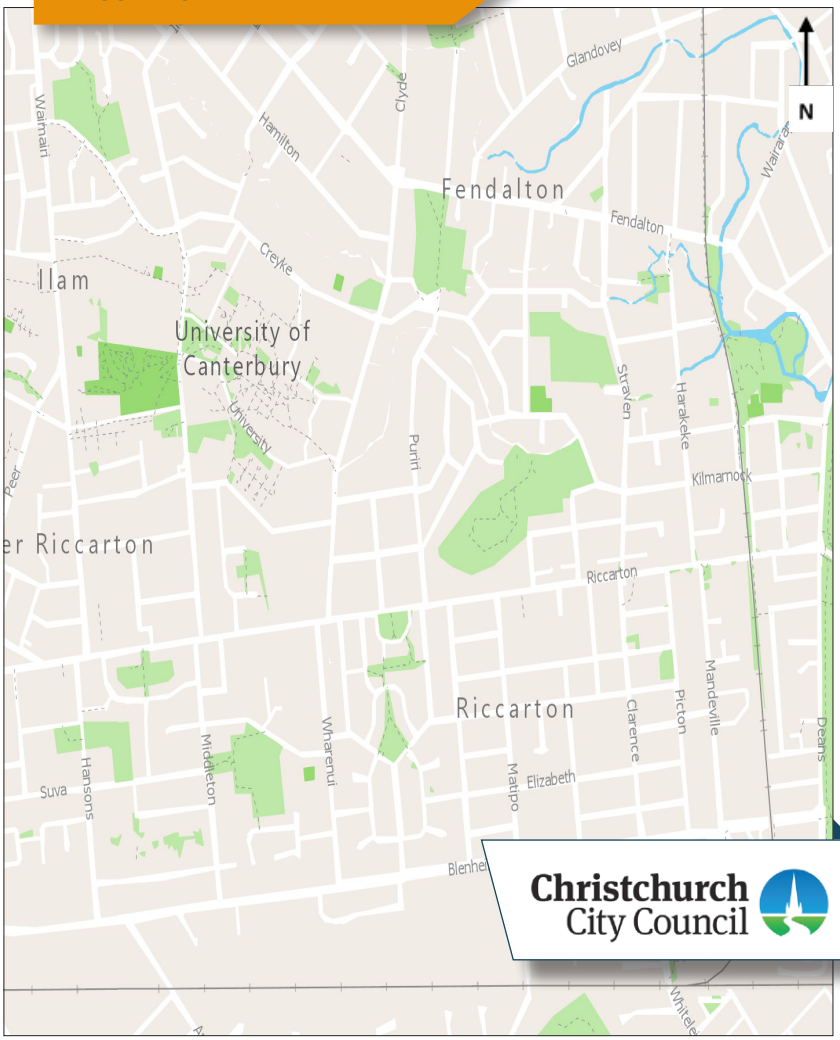
QUICK FACTS

The population of the wider Riccarton area is approximately **6,900 people,** there are two high schools and the Canterbury University campus is located in the area.

The **Orbiter** core bus route travels through the area, with 190,000 monthly boarding's recorded in November 2017.

53% of Riccarton Ward residents are dissatisfied with the condition of roads, related to the road surface condition.

RICCARTON AREA



Christchurch City Council

ACCESS

Land Use in the Riccarton area is predominantly zoned residential with several community parks, commercial activities including Riccarton Mall and several schools including Christchurch Boys and Christchurch Girls High Schools and Canterbury University campus (purple shaded areas).

ZONE

- Commercial Core Zone
- Commercial Local Zone
- Industrial General Zone
- Open Space Community Parks Zone
- Open Space Water & Margins Zone
- Residential Medium Density Zone
- Residential Suburban Zone
- Residential Suburban Density Transition Zone
- Specific Purpose (Flat Land Recovery) Zone
- Specific Purpose (School) Zone
- Transport Zone

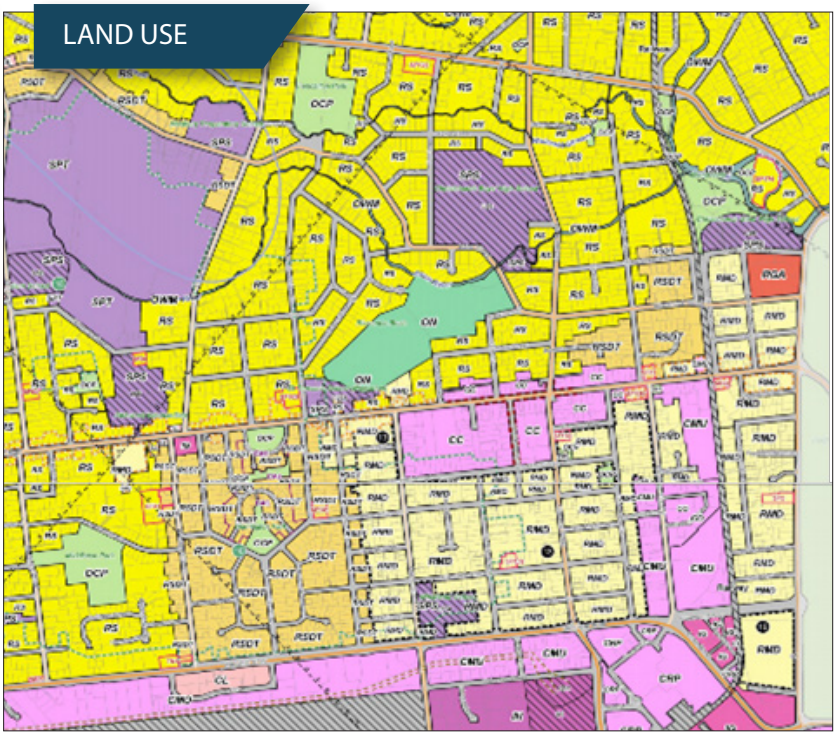
Public Transport: Three core bus routes service the Richmond area. The Orbiter service (Or) provides connections around the perimeter of the Central City. The Orbiter has several stops along Riccarton Road and Waimari Road, before it heads north.

The Yellow Line (Y) connects the southwest suburbs of Rolleston and Hornby with the Central City, Linwood and New Brighton. The Yellow Line operates along Riccarton Road in the study area.

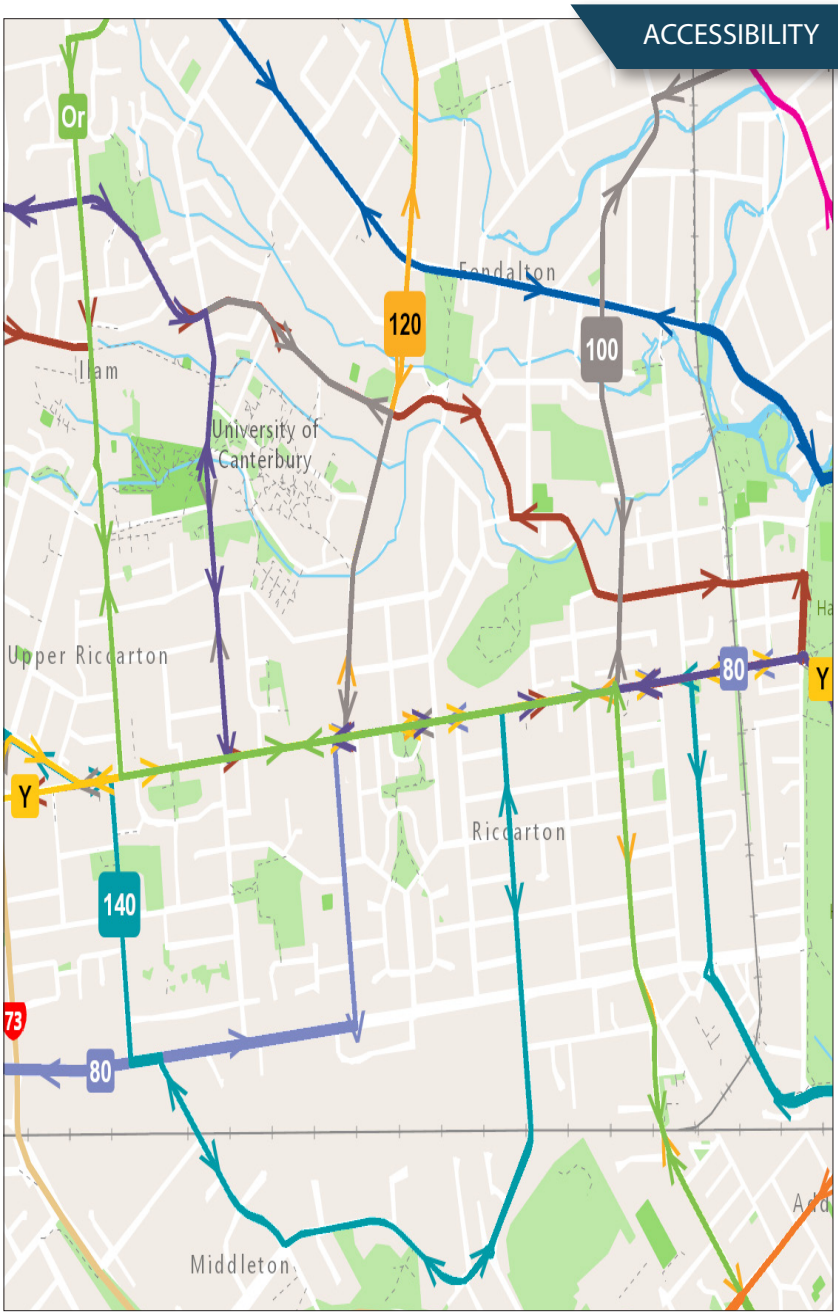
The Purple Line (P) connects the Airport and University to the west of the city with Sumner to the east. The Purple Line also operates along Riccarton Road in the study area. Several suburban bus routes also operate in the area and a bus transfer hub is located on Riccarton Road in the vicinity of the mall.

Cycle Routes: Several on road cycle lanes are provided in the study area and the Uni-Cycle Major Cycle Route links the University with the Central City (below image).

LAND USE



ACCESSIBILITY



SAFETY

Collective Risk is a measure of the total number of fatal and serious injury crashes per kilometre over a section of road.

Riccarton Road has a high collective risk rating, Clarence Street and Straven Road are rated as medium-high risk.

Personal Risk is a measure of the danger to each individual using the road being assessed. Personal risk takes into account the traffic volumes on each section of road and shows the likelihood of a driver or rider, on average, being involved in a fatal or serious crash on a particular stretch of road.

Several roads in the Riccarton area have a medium-high personal risk rating and Matipo Street is rated as high personal risk as shown in the personal risk map opposite.

Crashes: One fatal crash has occurred in the past five year period (2014-2018) at the rail level crossing on Fendalton Road where a cyclist was killed by a train whilst crossing the track.

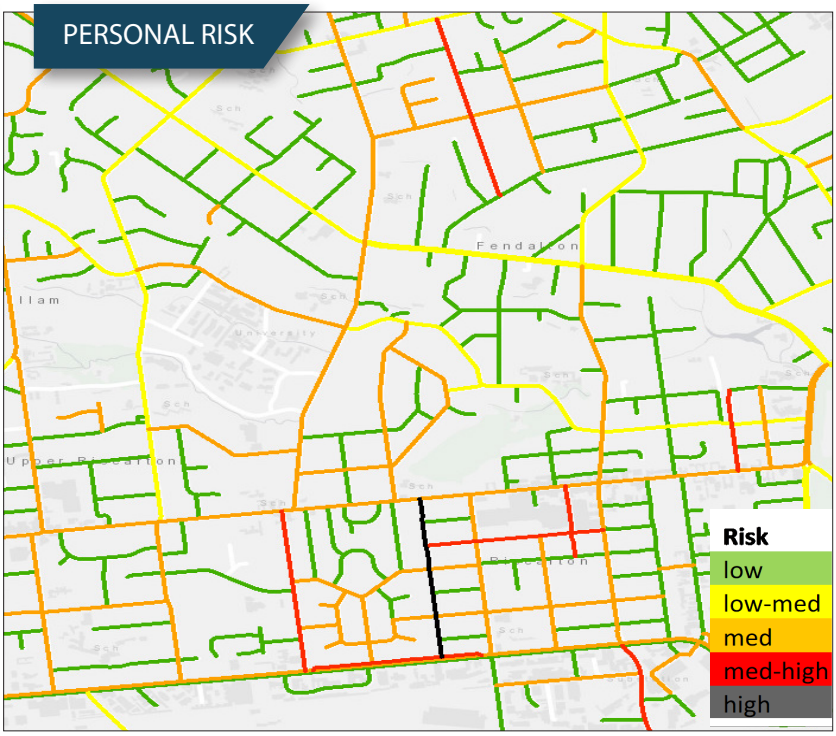
There have been a number of serious injury crashes as shown in the Crash Analysis System map opposite.

Common themes for crashes in the area include:

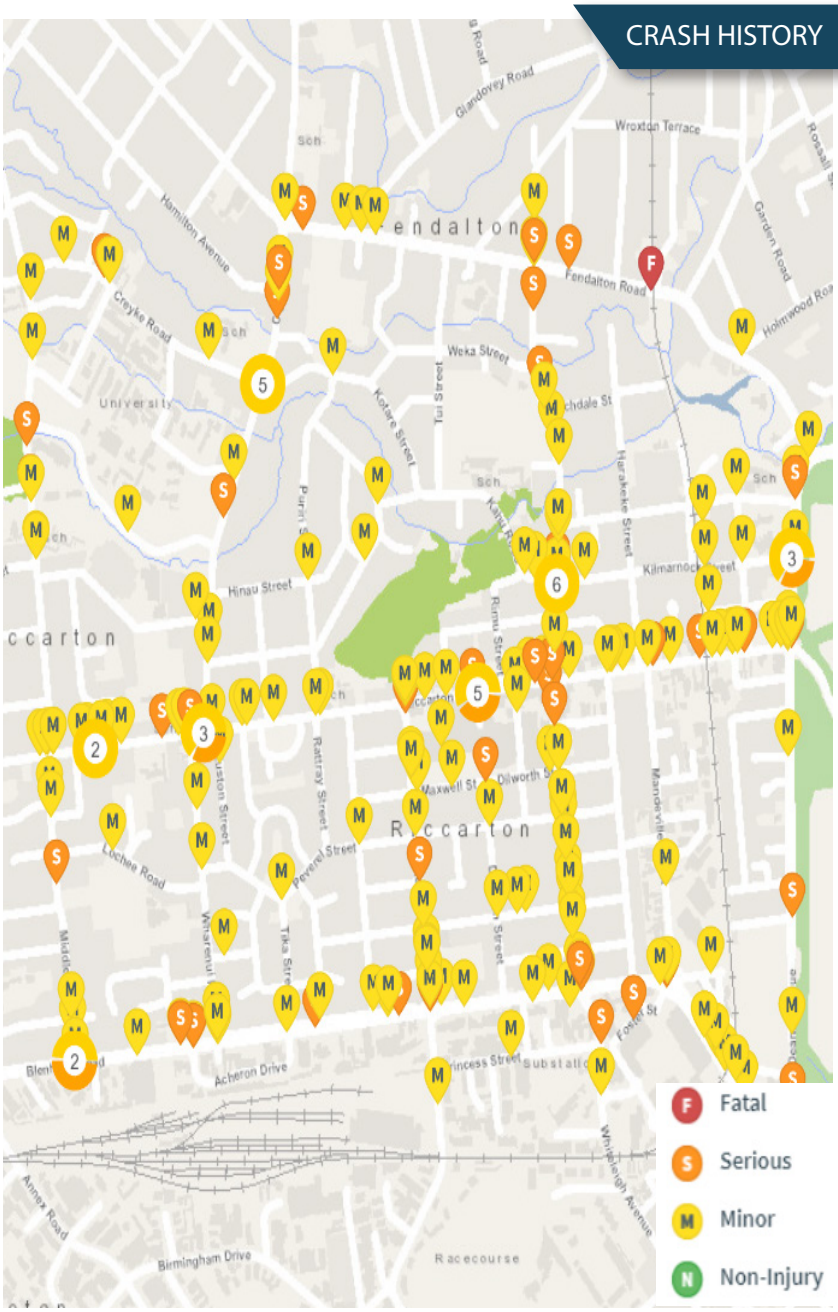
- Right turn traffic hitting oncoming vehicles
- Rear end crashes
- Pedestrian crashes whilst crossing
- Loss of control

There has also been a number of minor and non-injury crashes over the past five years.

PERSONAL RISK



CRASH HISTORY



CONDITION

Customer Insights: Data from the 2018 Life in Christchurch Transport survey shows that respondents from the Riccarton area identified poor road safety as a key concern as well as poor road surfaces and road layout, wayfinding and traffic signal issues, as highlighted by the following responses from customers:

"Heavy vehicles bounce in dips on local roads, causing nearby houses to shake".

"More green turning arrows at lights would help the insane amount of red light running that is occurring - maybe also red light cameras".

"The new cycle routes are great but parts of my journey don't have a cycle lane".

"Need to accelerate road surface repairs post earthquake".

Condition Data: As shown in the condition map opposite many of the roads and footpaths in the Riccarton study area are classified as being in a very poor condition.

Condition data includes an assessment of the carriageway surface, pavement integrity and road roughness.

An audit of these roads has identified a number of common issues related to the asset condition including:

- Kerb and dish channel in poor condition
- Footpaths in poor condition- cracking
- Channel invert deterioration

To address these problems the transport engineer has recommended minor repairs to many of these roads.

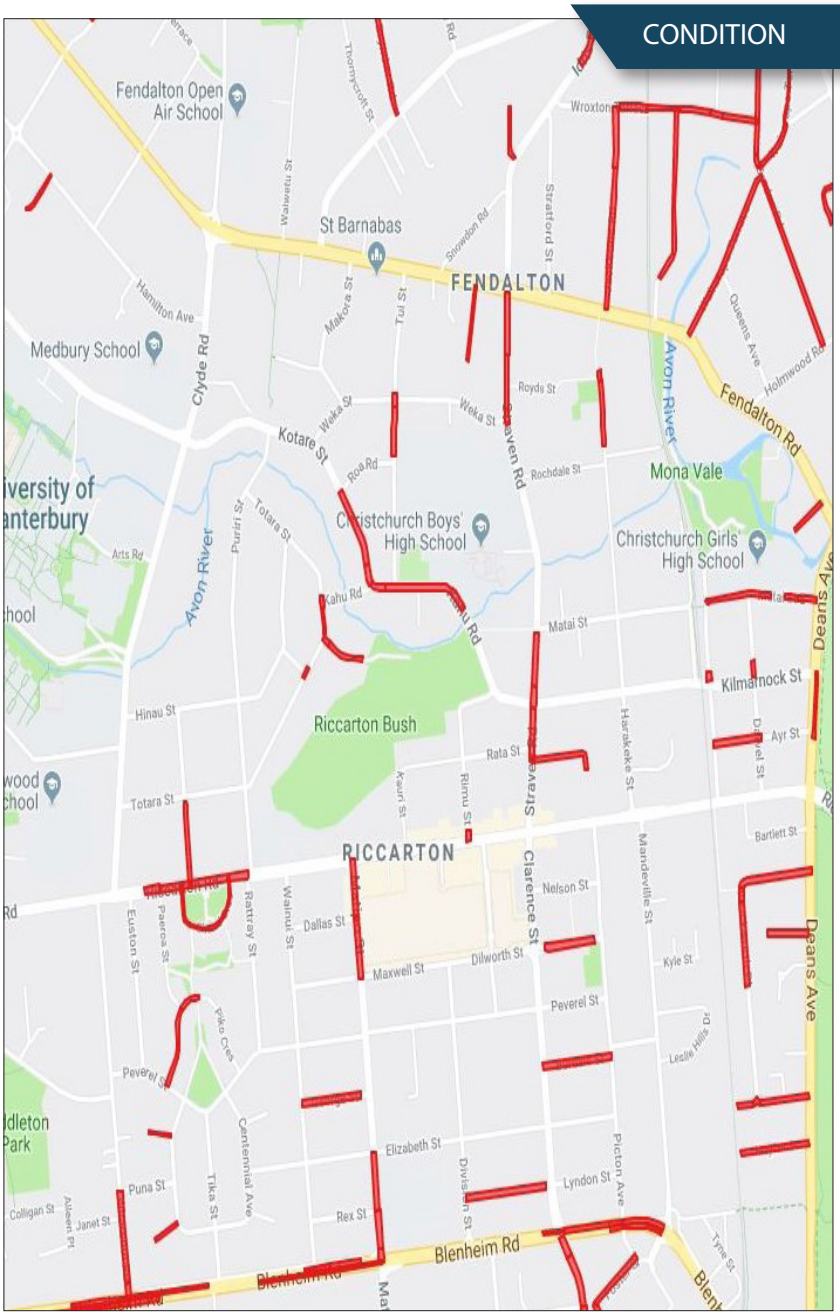
Opportunities to narrow some of the roads have also been identified to improve safety and accessibility outcomes.

INSIGHTS

Christchurch drivers see red at right turns

Abbie Napier • 06:25, Jan 29 2014

CONDITION



PRIORITISATION

RANKING

Multi-Criteria Analysis: Overall grade is made up of three indicators:

Access: Average of five sub-indicators which reflect the place and movement function of the corridors within the study area.

Safety: Average of six sub-indicators that indicate the collective and personal risk of the corridor and the number of crashes over the past five years (2013-2018) by severity (fatal, serious, minor and non-injury).

Asset Condition: A single indicator that has been developed following detailed condition audits of the corridors. The indicator identifies the priority for treatment and is based on sub criteria including condition audits and the scope of works required.

QUICK WINS

The Christchurch Regeneration Acceleration Facility roading and transport improvements will transform the transport system, making it safer, more accessible and will improve asset condition and value for money, which in turn will support the ongoing regeneration of the city. However, while these works are planned, scoped and developed, the people using the local transport system still expect to see improvements. For this reason the business case has identified a number of 'quick wins'.

We define 'quick wins' as strong candidates for prioritisation, these are projects that can deliver real economic, social and environmental benefits to residents in a short period of time. The 'quick wins' identified below represent low cost and low risk improvements that can be made to improve access, safety and condition outcomes.

In many cases the 'quick wins' solution may be all that is required to address the issues identified. In other cases the 'quick wins' provide a level of improvement, prior to more significant investment at a later stage as highlighted on the next page.

Priority	Street	From	To	Access	Safety	Condition	Cost	Cumulative
1	Straven Road	Kilmarnock Street	Fendalton Road	Medium	High	High	$170,000	$170,000
2	Acacia Avenue	Middleton Road	End	Low	Low	High	$5,000	$175,000
3	Auburn Avenue	Renfrew Street	Riccarton Road	Low	Low	High	$105,000	$280,000
4	Bradshaw Terrace	Straven Road	End	Low	Low	High	$20,000	$300,000
5	Field Terrace	Middleton Road	Riccarton Road	Low	Low	High	$55,000	$355,000
6	Hampton Place	Memorial Avenue	End	Low	Low	High	$45,000	$400,000
7	Hanrahan Street	Newnham Terrace	Waimariri Road	Low	Low	High	$45,000	$445,000
8	Hanrahan Street	Illam Road	Newnham Terrace	Low	Low	High	$35,000	$480,000
9	Heathfield Avenue	Fendalton Road	End	Low	Low	High	$15,000	$495,000
10	Lester Lane	Deans Avenue	End	Low	Low	High	$40,000	$535,000
11	Makora Street	Fendalton Road	Weka Street	Low	Low	High	$45,000	$580,000
12	Mayfair Street	Deans Avenue	End	Low	Low	High	$5,000	$585,000
13	Renfrew Street	Auburn Avenue	Suva Street	Low	Low	High	$40,000	$625,000
14	Ryeland Avenue	Illam Road	End	Low	Low	High	$40,000	$665,000
15	Tiora Place	Auburn Avenue	End	Low	Low	High	$25,000	$690,000
16	Wood Lane	Fendalton Road	End	Low	Low	High	$15,000	$705,000
17	Puriri Street	Riccarton Road	Hinau Street	Medium	Low	Medium	$50,000	$755,000
18	Athol Terrace	Waimariri Road	End	Low	Low	Medium	$20,000	$775,000
19	Burdale Street	Picton Avenue	Clarence Street	Low	Low	Medium	$20,000	$795,000
20	Kyle Street	Mandeville Street	End	Low	Low	Medium	$10,000	$805,000
21	Seton Street	Kyle Street	End	Low	Low	Medium	$10,000	$815,000
22	Titoki Street	Kahu Road	End	Low	Low	Medium	$25,000	$840,000
							$840,000	

High Medium Low

PRIORITISATION

RANKING

Multi-Criteria Analysis: Overall grade is made up of three indicators:

Access: Average of five sub-indicators which reflect the place and movement function of the corridors within the study area.

Safety: Average of six sub-indicators that indicate the collective and personal risk of the corridor and the number of crashes over the past five years (2013-2018) by severity (fatal, serious, minor and non-injury).

Asset Condition: A single indicator that has been developed following detailed condition audits of the corridors. The indicator identifies the priority for treatment and is based on sub criteria including condition audits and the scope of works required.

First column identifies 'quick wins' that require further investment to resolve all of the issues identified.
Red line indicates the extent of CRAF investment (recommended option).

PRIORITY AREAS

	Priority	Street	From	To	Access	Safety	Condition	Cost	Cumulative
	23	Wharenui Road	Riccarton Road	Blenheim Road				$200,000	$1,040,000
	24	Middleton Road	Riccarton Road	Acacia Ave				$3,500,000	$4,540,000
	25	Waimairi Road	Peer Street	Maidstone Road				$2,000,000	$6,540,000
	26	Middleton Road	Acacia Ave	Blenheim Road				$450,000	$6,990,000
	27	Suva Street	Hansons Lane	Middleton Road				$3,300,000	$10,290,000
	28	Konini Street	Riccarton Road	Totara				$835,000	$11,125,000
	29	Konini Street	Totara	Hinau Street				$835,000	$11,960,000
	30	Auburn Avenue	Middleton Road	Renfrew Street				$400,000	$12,360,000
4	31	Bradshaw Terrace	Straven Road	End				$900,000	$13,260,000
	32	Brockworth Place	Deans Avenue (N)	Deans Avenue (S)				$125,000	$13,385,000
19	33	Burdale Street	Picton Avenue	Clarence Street				$50,000	$13,435,000
6	34	Hampton Place	Memorial Avenue	End				$95,000	$13,530,000
9	35	Heathfield Avenue	Fendalton Road	End				$750,000	$14,280,000
	36	Ngahere Street	Totara Street	End				$525,000	$14,805,000
14	37	Ryeland Avenue	Ilam Road	End				$100,000	$14,905,000
16	38	Wood Lane	Fendalton Road	End				$500,000	$15,405,000
3	39	Auburn Avenue	Renfrew Street	Riccarton Road				$490,000	$15,895,000
	40	Braithwaite Street	Ryeland Avenue	End				$50,000	$15,945,000
5	41	Field Terrace	Middleton Road	Riccarton Road				$1,250,000	$17,195,000
15	42	Tiora Place	Auburn Avenue	End				$135,000	$17,330,000
									$17,330,000

Note: The streets outlined in the programme are indicative, and based on high level cost estimates. The Council will only deliver what it can within the available budget, and indicative programme shown may be subject to change.

High Medium Low

Christchurch City Council

RICHMOND AREA

ROADING & TRANSPORT

REPORT CARD 2019

2019 CRAF

Situated to the inner north east of the city centre, Richmond is bounded by Shirley Road to the north, Hills Road to the west, and the Avon River to the south and east.

OVERALL GRADE

ACCESS

SAFETY

ASSET CONDITION

WHAT MAKES UP THIS GRADE?

Overall grade is made up of three indicators:

Access: Average of five sub-indicators which reflect the place and movement function of the corridors within the study area.

Safety: Average of six sub-indicators that indicate the collective and personal risk of the corridor and the number of crashes over the past five years (2013-2018) by severity (fatal, serious, minor and non-injury).

Asset Condition: A single indicator that has been developed following detailed condition audits of the corridors. The indicator identifies the priority for treatment and is based on sub criteria including condition audits and the scope of works required.

Note: This report card only includes an assessment of the corridors in the study area which have been identified as requiring roading and transport improvements.

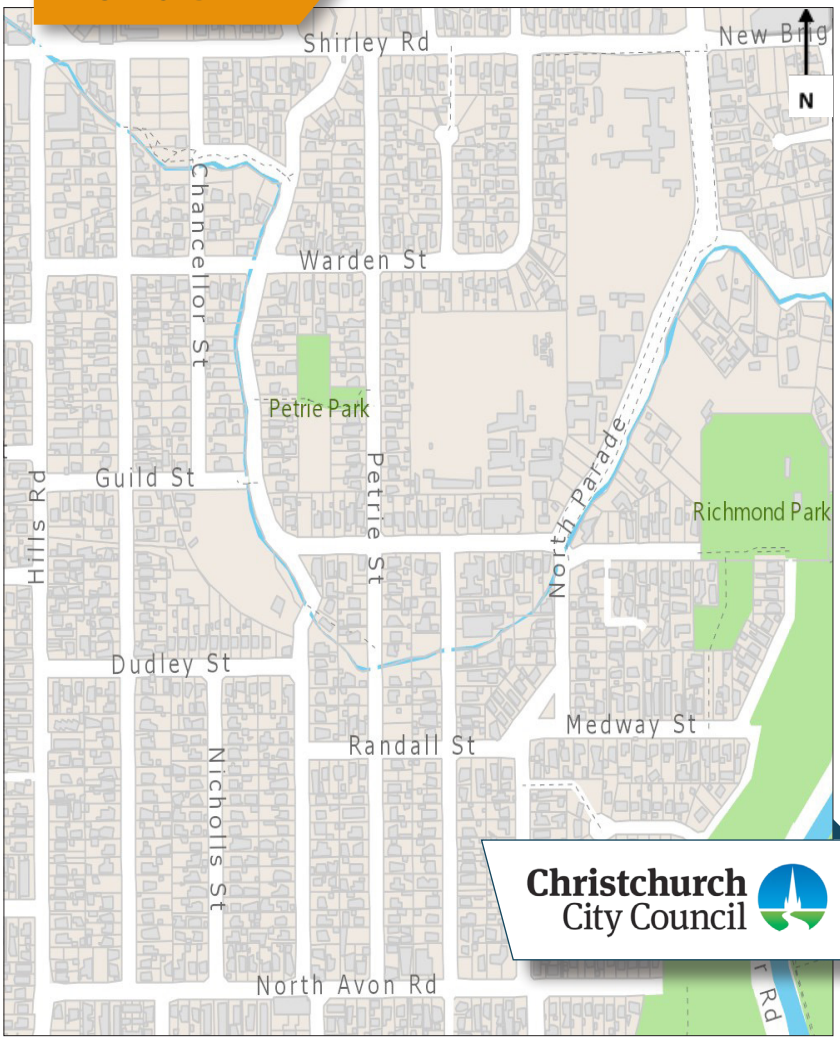
QUICK FACTS

The population of the Richmond area is approximately **4,300 people,** there are three schools, a doctors surgery and a library located in the area. Richmond is located in the Innes Ward of Christchurch.

The **Orbiter** core bus route travels through Richmond, with 190,000 monthly boarding's recorded in November 2017.

66% of Innes Ward residents are dissatisfied with the condition of roads. Residents have also raised issues with public transport accessibility.

RICHMOND AREA



ACCESS

Land Use in the Richmond area is predominantly zoned residential with several community parks and Shirley Intermediate School. Banks Avenue Primary School is to be re-built on the former site of Shirley Boys High School to the north-east (purple shaded areas).

ZONE

- Commercial Core Zone
- Commercial Local Zone
- Industrial General Zone
- Open Space Community Parks Zone
- Open Space Water & Margins Zone
- Residential Medium Density Zone
- Residential Suburban Zone
- Residential Suburban Density Transition Zone
- Specific Purpose (Flat Land Recovery) Zone
- Specific Purpose (School) Zone
- Transport Zone

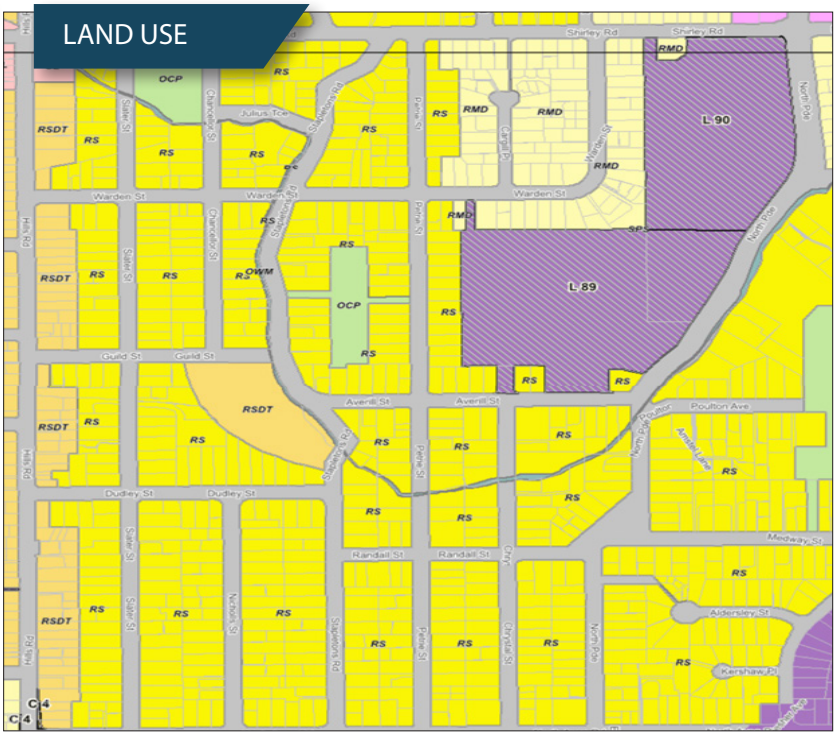
Public Transport: Two core bus routes service the Richmond area. The Orbiter service (Or) provides connections around the perimeter of the Central City. The Orbiter has several stops along North Avon Road, North Parade and Shirley Road, before it heads north on Hills Road.

The Orange Line (O) connects Parklands to the east with the Central City and southern suburbs to Halswell. The Orange Line operates along Hills Road and Shirley Road in the study area.

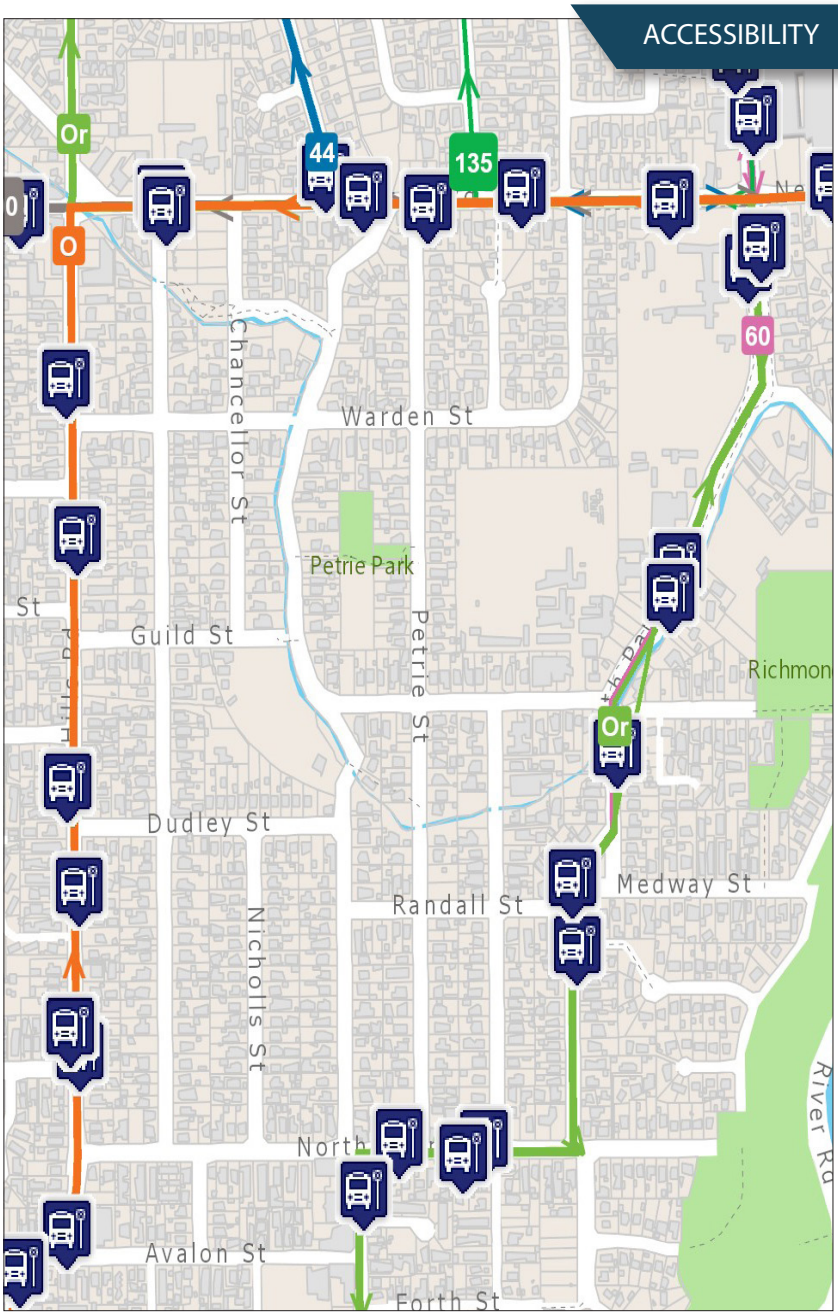
Route number 60 connects Southshore and New Brighton with the Central City and Spreydon and Wigram to the southwest. Route number 60 operates along North Avon Road and North Parade in the study area.

Cycle Routes: Several on road cycle lanes are provided on the perimeter of the study area, including on Hills Road, Shirley Road (below image) and parts of North Parade.

LAND USE



ACCESSIBILITY



SAFETY

Collective Risk is a measure of the total number of fatal and serious injury crashes per kilometre over a section of road.

The majority of roads in Richmond have a low collective risk rating. Chrystal Street has a low-medium collective risk rating.

Personal Risk is a measure of the danger to each individual using the road being assessed. Personal risk takes into account the traffic volumes on each section of road and shows the likelihood of a driver or rider, on average, being involved in a fatal or serious crash on a particular stretch of road.

Several roads in the Richmond area have a medium personal risk rating, including Chrystal Street and Stapletons Road, as shown in the personal risk map opposite.

Crashes: Although no fatal crashes have occurred in the past five year period (2014-2018), there have been three serious injury crashes as shown in the Crash Analysis System map opposite and detailed below.

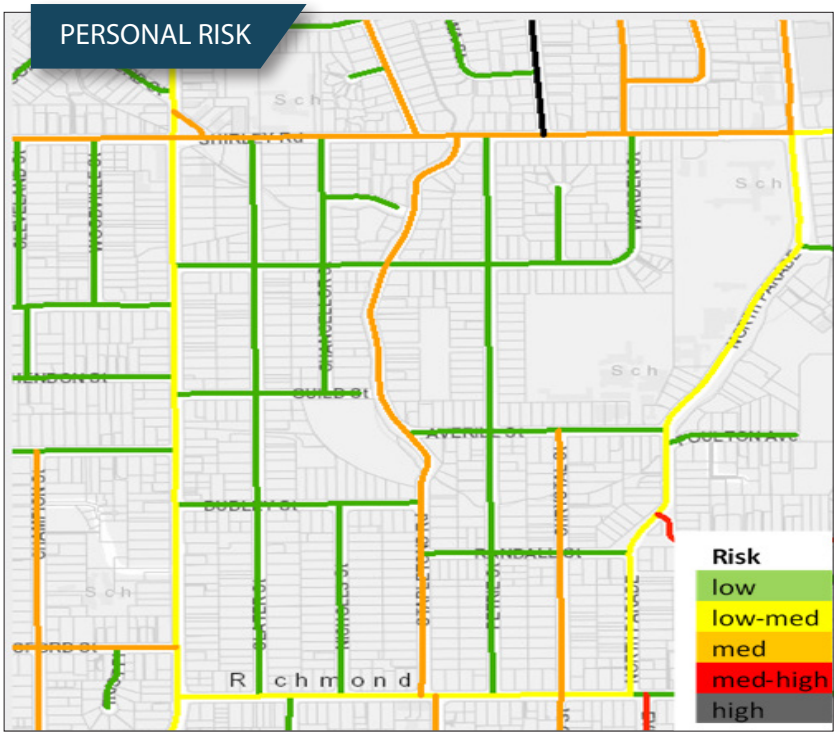
Averill Street
The serious injury crash on Averill Street occurred at the intersection with North Parade and involved a car failing to give way and hitting a cyclist turning right.

Randall Street
The serious injury crash on Randall Street occurred at the intersection with Chrystal Street and involved a car driver not stopping at the stop sign and hitting a truck.

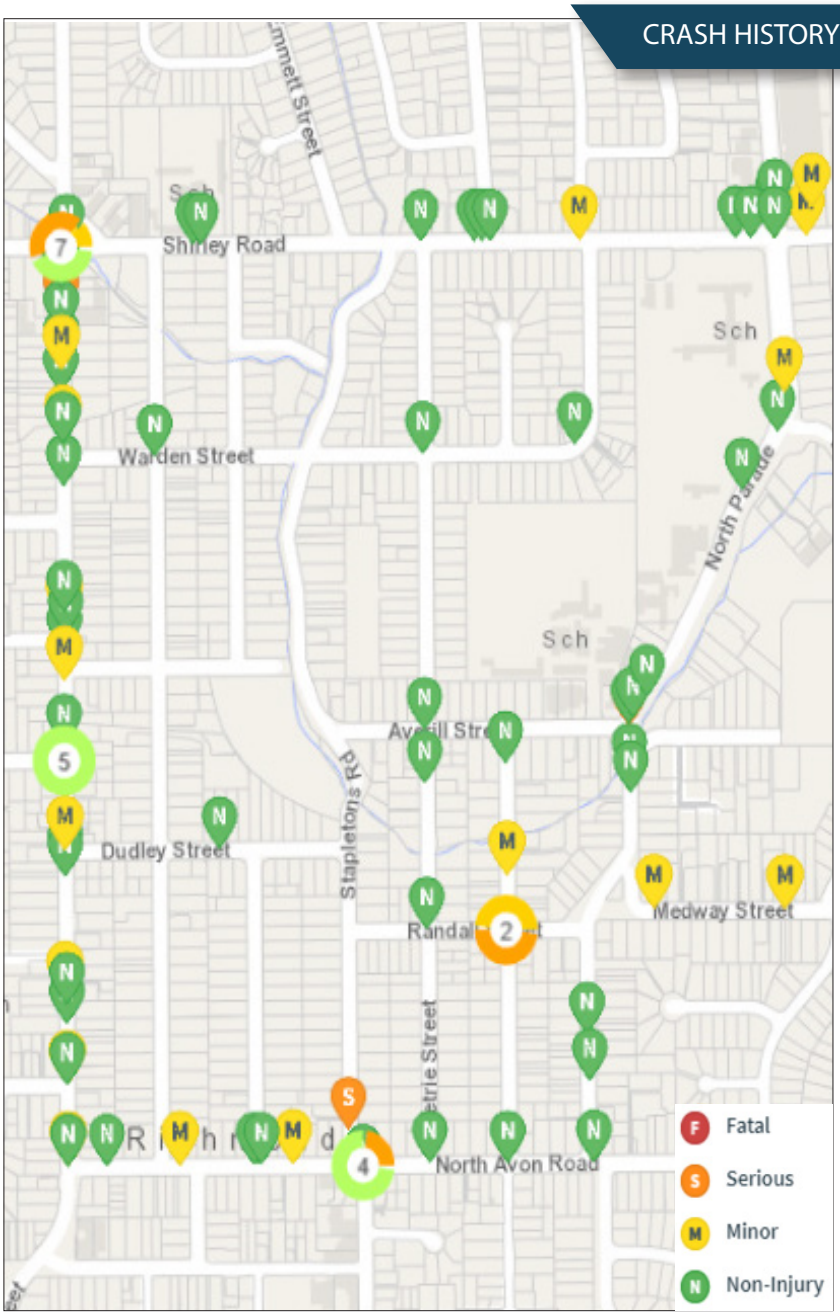
Stapletons Road
The serious injury crash on Stapletons Road occurred in the vicinity of the intersection with North Avon Road and involved a car loosing control and hitting a fence in wet conditions.

There has also been a number of minor and non-injury crashes over the past five years as shown opposite.

PERSONAL RISK



CRASH HISTORY



CONDITION

Customer Insights: Data from the 2018 Life in Christchurch Transport survey shows that respondents from the Richmond area expressed frustration with the poor quality of some road surfaces and the time taken for repairs to be completed. Richmond is identified as an area with ongoing condition issues related to the surface of the roads and repairs not being completed in a timely manner, as highlighted by the following responses from customers:

"The way our roads have been left for years after the earthquake is terrible".

"I understand it takes time to repair the earthquake damage but it seems to be going on forever".

"The roads and footpaths in Richmond are disgusting and need immediate attention".

Condition Data: As shown in the condition map opposite, many of the roads and footpaths in the Richmond study area are classified as being in a very poor condition.

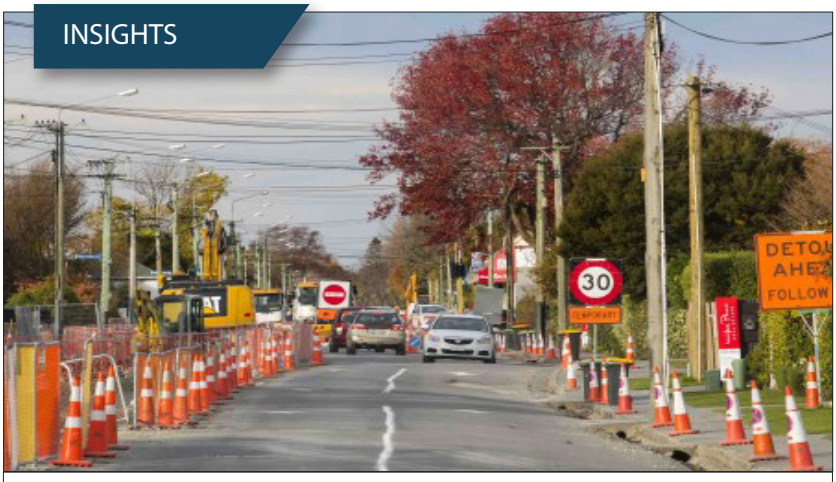
Condition data includes an assessment of the carriageway surface, pavement integrity and road roughness.

An audit of these roads has identified a number of common issues related to the asset condition including:

- Ponding of surface water
- Road surface cracking and slumping
- Pavement potholing

To address these problems the transport engineer has recommended boundary to boundary rebuild of many of these roads. Opportunities to narrow some of the roads have also been identified to improve safety and accessibility outcomes.

INSIGHTS



Residents in Christchurch's 'unkempt and neglected' Richmond frustrated after years of road closures, disruption

Tina Law • 12:23, May 15 2018

CONDITION

PRIORITISATION

RANKING

Multi-Criteria Analysis: Overall grade is made up of three indicators:

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QUICK WINS

The Christchurch Regeneration Acceleration Facility roading and transport improvements will transform the transport system, making it safer, more accessible and will improve asset condition and value for money, which in turn will support the ongoing regeneration of the city. However, while these works are planned, scoped and developed, the people using the local transport system still expect to see improvements. For this reason the business case has identified a number of 'quick wins'.

We define 'quick wins' as strong candidates for prioritisation, these are projects that can deliver real economic, social and environmental benefits to residents in a short period of time. The 'quick wins' identified below represent low cost and low risk improvements that can be made to improve access, safety and condition outcomes.

In many cases the 'quick wins' solution may be all that is required to address the issues identified. In other cases the 'quick wins' provide a level of improvement, prior to more significant investment at a later stage as highlighted on the next page.

Priority	Street	From	To	Access	Safety	Condition	Cost	Cumulative
1	Chrystal Street	Randall Street	Averill Street				$141,000	$141,000
2	Averill Street	Stapletons Road	Petrie Street				$87,000	$228,000
3	Averill Street	Petrie Street	North Parade				$147,000	$375,000
4	Chancellor Street	Guild Street	Warden Street				$75,000	$450,000
5	Chancellor Street	Warden Street	Culvert				$60,000	$510,000
6	Chancellor Street	Julius Terrace	Shirley Road				$69,000	$579,000
7	Dudley Street	Hills Road	Slater Street				$69,000	$648,000
8	Guild Street	Hills Road	Chancellor Street				$34,500	$682,500
9	Guild Street	Chancellor Street	End				$49,500	$732,000
10	Julius Terrace						$57,500	$789,500
11	Petrie Street	Averill Street	Warden Street				$198,000	$987,500
12	Slater Street	North Avon Road	Dudley Street				$72,000	$1,059,500
13	Slater Street	Culvert	Guild Street				$18,000	$1,077,500
14	Slater Street	Guild Street	Warden Street				$25,000	$1,102,500
15	Slater Street	Warden Street	Shirley Road				$144,000	$1,246,500
16	Stapletons Road	North Avon Road	Randall Street				$144,000	$1,390,500
							$1,390,500	

High Medium Low

PRIORITISATION

RANKING

Multi-Criteria Analysis: Overall grade is made up of three indicators:

Access: Average of five sub-indicators which reflect the place and movement function of the corridors within the study area.

Safety: Average of six sub-indicators that indicate the collective and personal risk of the corridor and the number of crashes over the past five years (2013-2018) by severity (fatal, serious, minor and non-injury).

Asset Condition: A single indicator that has been developed following detailed condition audits of the corridors. The indicator identifies the priority for treatment and is based on sub criteria including condition audits and the scope of works required.

First column identifies 'quick wins' that require further investment to resolve all of the issues identified.
Red line indicates the extent of CRAF investment (recommended option).

PRIORITY AREAS

	Priority	Street	From	To	Access	Safety	Condition	Cost	Cumulative
4	17	Chancellor Street	Guild Street	Warden Street				$1,050,000	$2,440,500
10	18	Julius Terrace						$253,000	$2,693,500
11	19	Petrie Street	Averill Street	Warden Street				$1,386,000	$4,079,500
12	20	Slater Street	North Avon Road	Dudley Street				$1,800,000	$5,879,500
13	21	Slater Street	Culvert	Guild Street				$1,050,000	$6,929,500
16	22	Stapletons Road	North Avon Road	Randall Street				$1,200,000	$8,129,500
1	24	Chrystal Street	Randall Street	Averill Street				$987,000	$9,116,500
2	23	Averill Street	Stapletons Road	Petrie Street				$609,000	$9,725,500
3	25	Averill Street	Petrie Street	North Parade				$1,029,000	$10,754,500
6	26	Chancellor Street	Julius Terrace	Shirley Road				$483,000	$11,237,500
5	27	Chancellor Street	Warden Street	Culvert				$420,000	$11,657,500
7	28	Dudley Street	Hills Road	Slater Street				$483,000	$12,140,500
8	29	Guild Street	Hills Road	Chancellor Street				$483,000	$12,623,500
9	30	Guild Street	Chancellor Street	End				$693,000	$13,316,500
15	31	Slater Street	Warden Street	Shirley Road				$1,008,000	$14,324,500
14	32	Slater Street	Guild Street	Warden Street				$1,008,000	$15,332,500
								$15,332,500	

Note: The streets outlined in the programme are indicative, and based on high level cost estimates. The Council will only deliver what it can within the available budget, and indicative programme shown may be subject to change.

High Medium Low

Christchurch City Council

SPREYDON, SOMERFIELD
WALTHAM & BECKENHAM AREA

ROADING & TRANSPORT

REPORT CARD 2019

2019 CRAF

Situated to the south of the city centre, the suburbs of Spreydon, Somerfield, Waltham and Beckenham are bounded by Brougham Street to the north. The Heathcote River also passes through the area.

OVERALL GRADE

ACCESS

SAFETY

ASSET CONDITION

WHAT MAKES UP THIS GRADE?

Overall grade is made up of three indicators:

Access: Average of five sub-indicators which reflect the place and movement function of the corridors within the study area.

Safety: Average of six sub-indicators that indicate the collective and personal risk of the corridor and the number of crashes over the past five years (2013-2018) by severity (fatal, serious, minor and non-injury).

Asset Condition: A single indicator that has been developed following detailed condition audits of the corridors. The indicator identifies the priority for treatment and is based on sub criteria including condition audits and the scope of works required.

Note: This report card only includes an assessment of the corridors in the study area which have been identified as requiring roading and transport improvements.

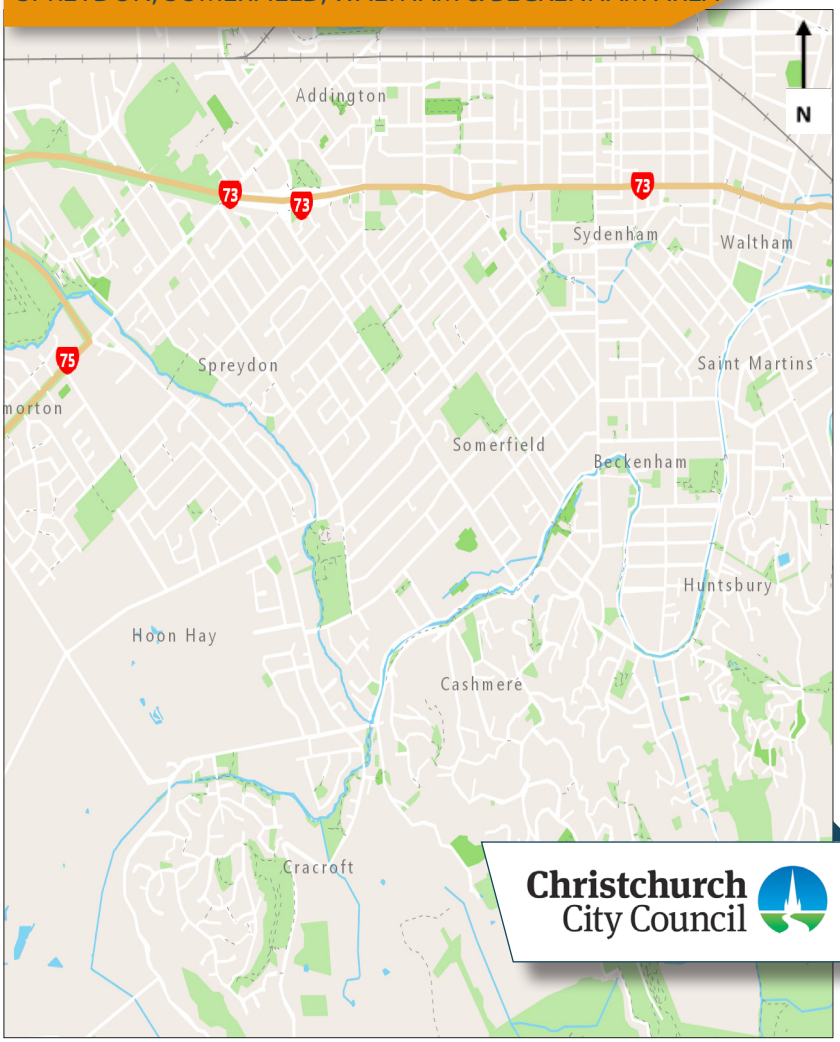
QUICK FACTS

The population of the Spreydon, Somerfield, Waltham and Beckenham area is approximately **10,700 people** and these suburbs are located in the Spreydon, Cashmere and Heathcote Wards of Christchurch.

The **Orbiter** and the **Blue** Line core bus routes travels through the study area, providing connections to the Central City Bus Interchange.

60% of Cashmere Ward residents are dissatisfied with the condition of roads. Residents also raised issues with intersection safety.

SPREYDON, SOMERFIELD, WALTHAM & BECKENHAM AREA



Christchurch City Council

ACCESS

Land Use in the study area is predominantly zoned residential with several community parks and schools (purple shaded areas). There are also some areas of commercial activity in each of the neighbourhood centres. The industrial zone to the south of the Central City borders the area.

ZONE

- Commercial Core Zone
- Commercial Local Zone
- Industrial General Zone
- Open Space Community Parks Zone
- Open Space Water & Margins Zone
- Residential Medium Density Zone
- Residential Suburban Zone
- Residential Suburban Density Transition Zone
- Specific Purpose (Flat Land Recovery) Zone
- Specific Purpose (School) Zone
- Transport Zone

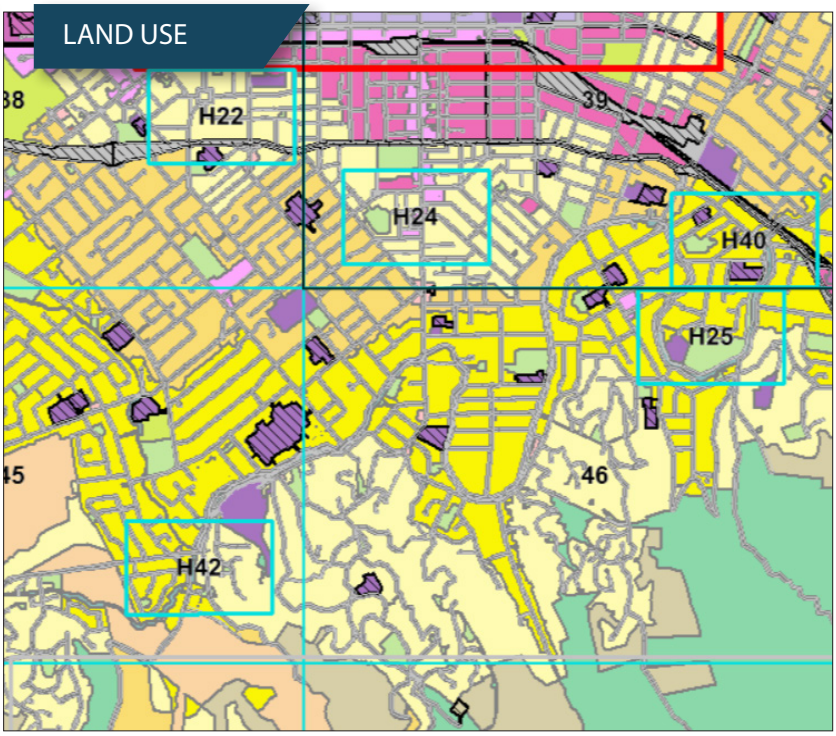
Public Transport: Two core bus routes service the area. The Orbiter service (Or) provides connections around the perimeter of the Central City. The Orbiter has several stops in the study area.

The Blue Line (B) connects Cashmere to the south with Belfast and Rangiora to the north via the Central City Bus Interchange. The Blue Line operates along Colombo Street in the study area.

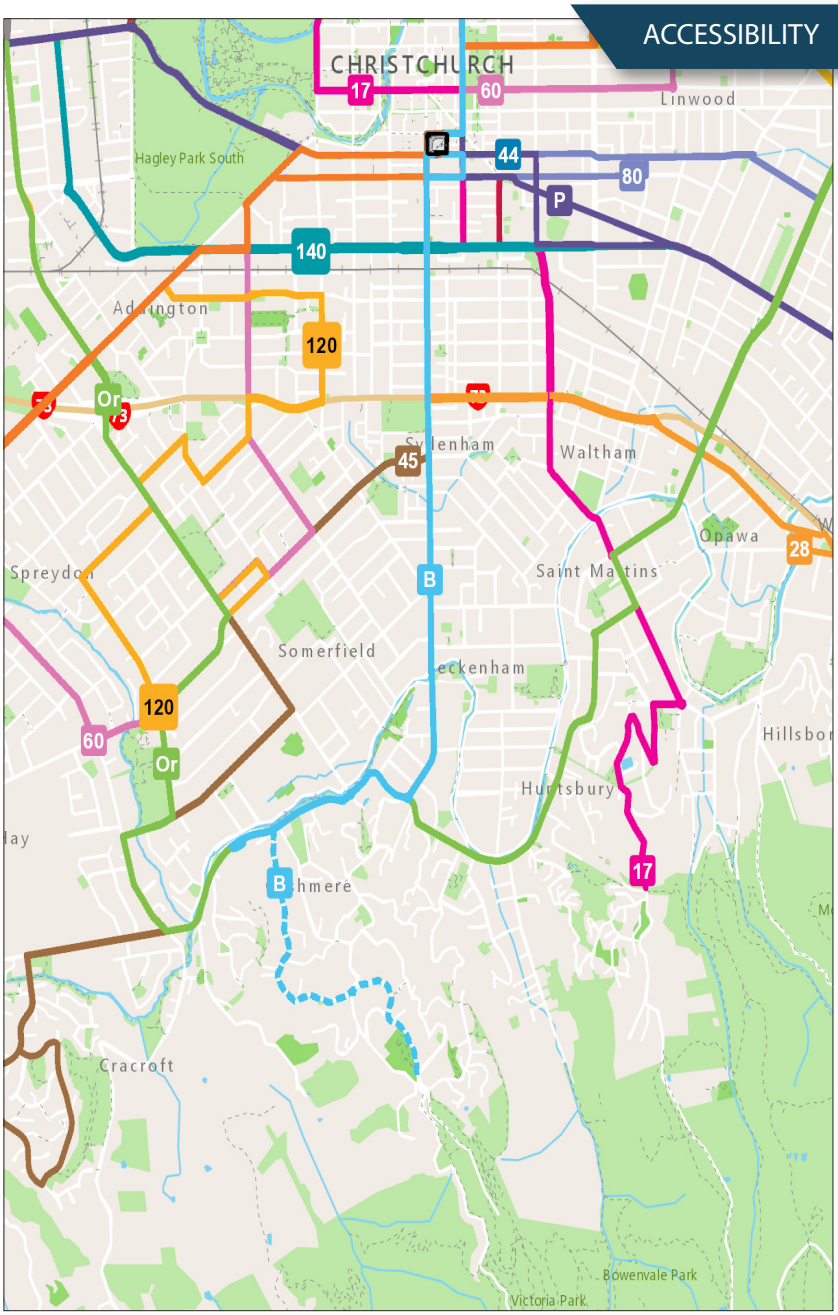
Route number 120 connects Riccarton and the University with Addington and Spreydon. Route number 45 connects Westmorland and Sydenham with the Central City. Route number 60 connects Hillmorton with Barrington and New Brighton. Route number 17 connects Bryndwr with Waltham and Huntsbury.

Cycle Routes: Both the Quarrymans Trail (below image) and the Little River Link Major Cycle Routes traverse through the area, along with several on road cycle lanes for example on Milton Street.

LAND USE



ACCESSIBILITY



SAFETY

Collective Risk is a measure of the total number of fatal and serious injury crashes per kilometre over a section of road.

The majority of roads in the study area have a low collective risk rating, with parts of Colombo Street and Barrington Street rated as medium-high risk.

Personal Risk is a measure of the danger to each individual using the road being assessed. Personal risk takes into account the traffic volumes on each section of road and shows the likelihood of a driver or rider, on average, being involved in a fatal or serious crash on a particular stretch of road.

Several roads in the study area have a medium-high personal risk rating, including Eastern Terrace and Waltham Road, as shown in the personal risk map opposite.

Crashes: Three fatal crashes have occurred in the past five year period (2014-2018), as well as a number of serious injury crashes as shown in the Crash Analysis System map opposite.

Parklands Drive

The fatal crash on Parklands Drive occurred at the intersection with North Parade and involved a car swinging wide and hitting a cyclist head on.

Lincoln Road

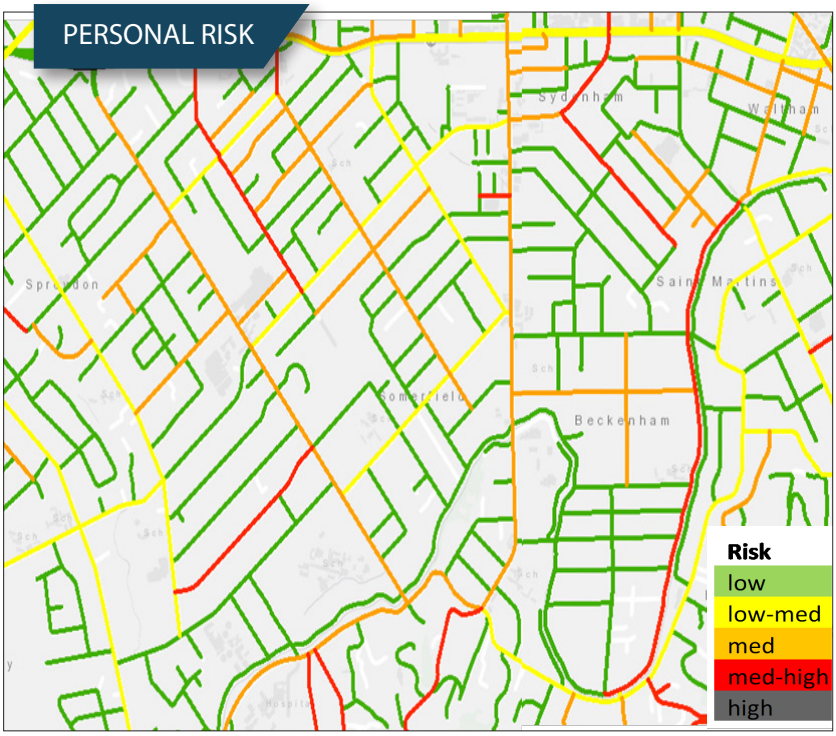
The fatal crash on Lincoln Road involved a cyclist who was sideswiped by a truck turning left.

Huxley Street

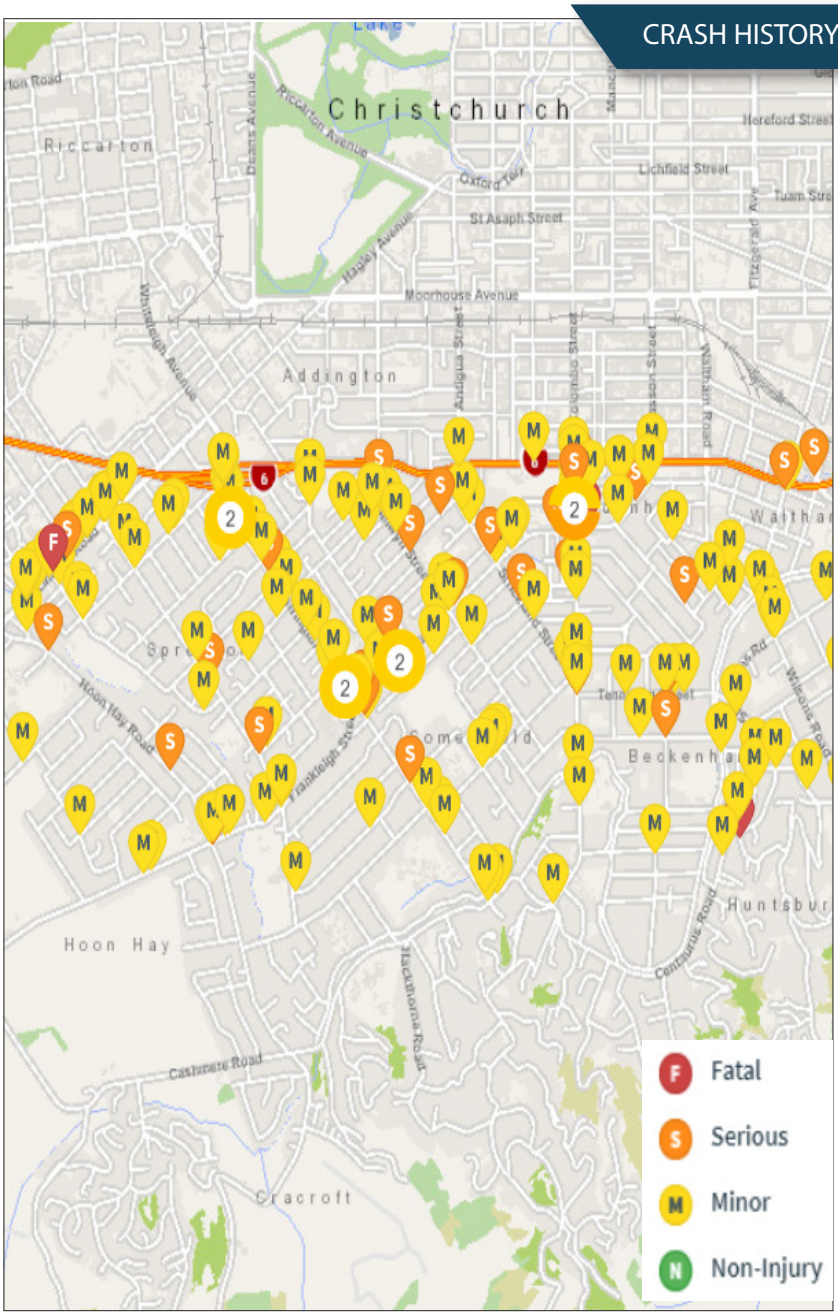
The fatal crash on Huxley Street occurred in the vicinity of the intersection with Colombo Street and involved a car hitting a pedestrian on the road at night.

There has also been a number of minor and non-injury crashes over the past five years.

PERSONAL RISK



CRASH HISTORY



CONDITION

Customer Insights: Data from the 2018 Life in Christchurch Transport survey shows that respondents from the study area expressed frustration with the layout of the road, traffic lights and wayfinding as well as the seal lifting on recently repaired roads, as highlighted by the following responses from customers:

"The dangerous drop around manhole covers and new bitumen road surfaces needs to be addressed".

"Keep delivering projects that will improve journeys for non-car modes".

"Lack of right turning arrows at traffic lights means many people take risks. Some intersections lane markings are not clear".

"Keep doing the great work on the cycle lanes".

Condition Data: As shown in the condition map opposite many of the roads and footpaths in the Spreydon, Somerfield, Waltham and Beckenham study area are classified as being in a very poor condition.

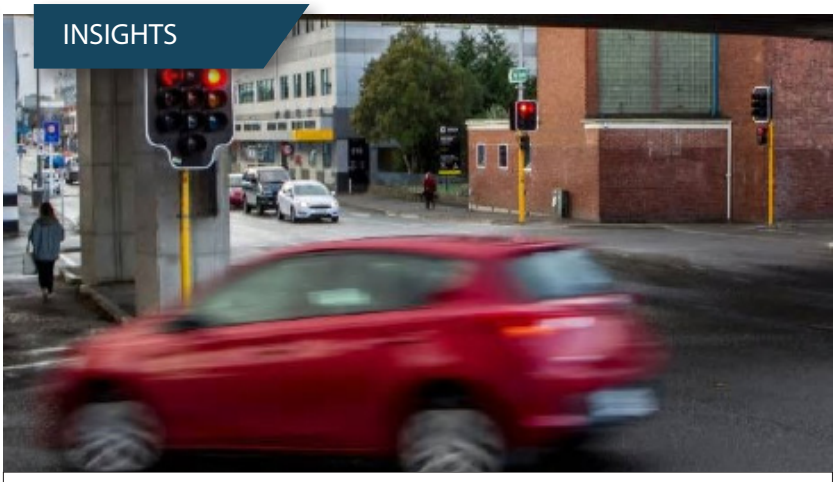
Condition data includes an assessment of the carriageway surface, pavement integrity and road roughness.

An audit of these roads has identified a number of common issues related to the asset condition including:

- Intersections and carriageway rough
- Channel deterioration
- Undulating due to patch repairs

To address these problems the transport engineer has recommended boundary to boundary rebuild of many of these roads. Opportunities to narrow some of the roads have also been identified to improve safety and accessibility outcomes.

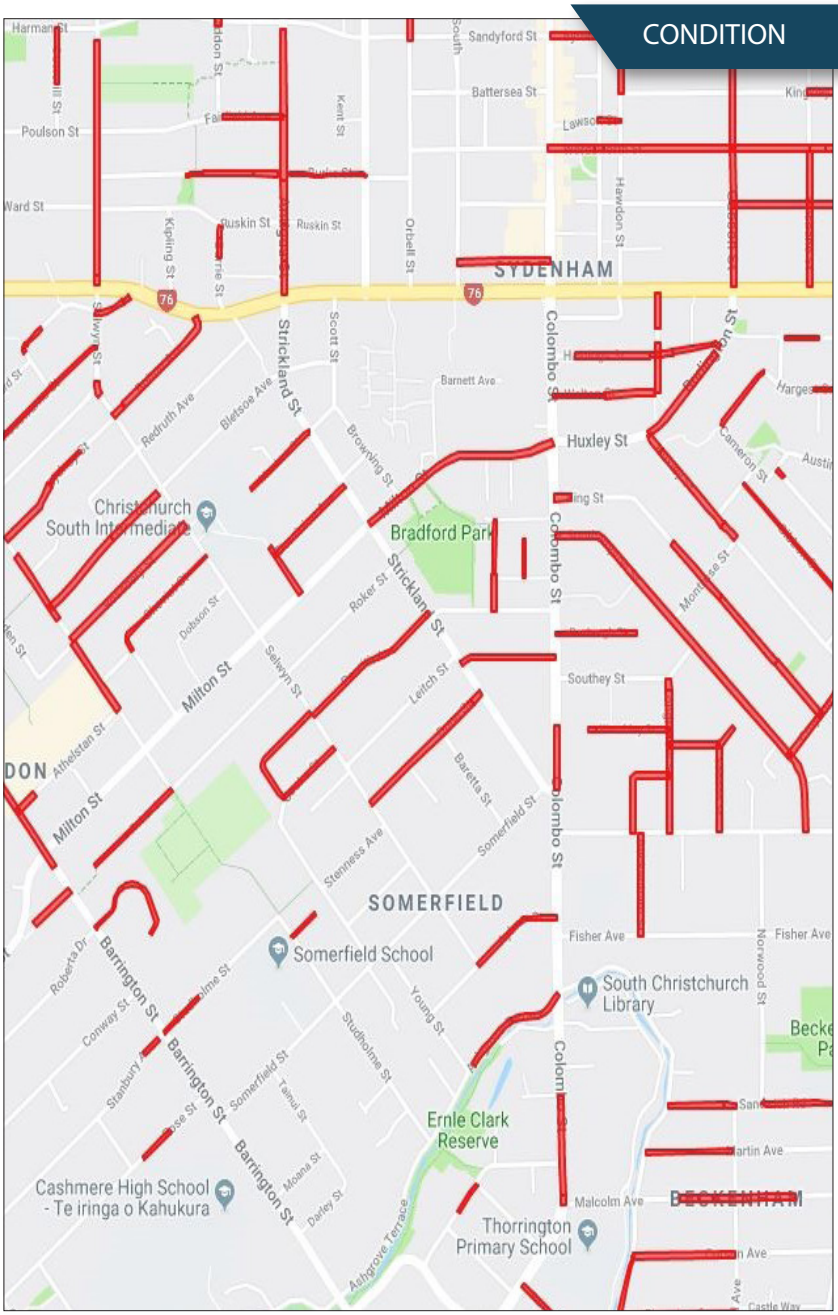
INSIGHTS



Red light running rampant in Christchurch

Michael Hayward • 16:04, Jan 18 2019

CONDITION



PRIORITISATION

RANKING

Multi-Criteria Analysis: Overall grade is made up of three indicators:

Access: Average of five sub-indicators which reflect the place and movement function of the corridors within the study area.

Safety: Average of six sub-indicators that indicate the collective and personal risk of the corridor and the number of crashes over the past five years (2013-2018) by severity (fatal, serious, minor and non-injury).

Asset Condition: A single indicator that has been developed following detailed condition audits of the corridors. The indicator identifies the priority for treatment and is based on sub criteria including condition audits and the scope of works required.

QUICK WINS

The Christchurch Regeneration Acceleration Facility roading and transport improvements will transform the transport system, making it safer, more accessible and will improve asset condition and value for money, which in turn will support the ongoing regeneration of the city. However, while these works are planned, scoped and developed, the people using the local transport system still expect to see improvements. For this reason the business case has identified a number of 'quick wins'.

We define 'quick wins' as strong candidates for prioritisation, these are projects that can deliver real economic, social and environmental benefits to residents in a short period of time. The 'quick wins' identified below represent low cost and low risk improvements that can be made to improve access, safety and condition outcomes.

In many cases the 'quick wins' solution may be all that is required to address the issues identified. In other cases the 'quick wins' provide a level of improvement, prior to more significant investment at a later stage as highlighted on the next page.

Priority	Street	From	To	Access	Safety	Condition	Cost	Cumulative
1	Ensors Road	Opawa Road	Brougham Street				$75,000	$75,000
2	Longfellow Street	Tennyson Street	Southey Street				$72,000	$147,000
3	Barrington Street	Frankleigh Street	Deloraine Street				$140,000	$287,000
4	Eastern Terrace	Tennyson Street	Waltham Road				$70,000	$357,000
5	Eastern Terrace	Birdwood Avenue	Tennyson Street				$185,000	$542,000
6	Fifield Terrace	Waltham Road	Ensors Road				$70,000	$612,000
7	Somerfield Street	Barrington Street	Strickland Street				$170,000	$782,000
8	Waimea Terrace	Colombo Street	Birdwood Avenue				$175,000	$957,000
9	Bewdley Street	Evesham Crescent West	Evesham Crescent East				$45,000	$1,002,000
10	Birdwood Avenue	Corson Avenue	Sandwich Road				$74,000	$1,076,000
11	Birdwood Avenue	Eastern Terrace	Corson Avenue				$135,000	$1,211,000
12	Conway Street	Barrington Street	Lyttelton Street				$30,000	$1,241,000
13	Darley Street	Barrington Street	Tainui Street				$65,000	$1,306,000
14	Deloraine Street	Barrington Street	End				$75,000	$1,381,000
15	Dominion Avenue	Milton Street	Bend				$40,000	$1,421,000
16	Ensors Road	Fifield Terrace	Opawa Road				$250,000	$1,671,000
17	Evesham Crescent	Bewdley Street West	Bewdley Street East				$85,000	$1,756,000
18	Faraday Street	Colombo Street	End				$7,500	$1,763,500
19	Garnett Avenue	Coronation Street	End				$25,000	$1,788,500
20	Hammond Place	Barrington Street	End				$32,000	$1,820,500
21	Hastings Street	Burlington Street	Jordan Street				$30,000	$1,850,500
22	Humboldt Street	Hargest Crescent	Cameron Street				$25,000	$1,875,500
23	Roxburgh Street	Colombo Street	End				$30,000	$1,905,500
24	Sefton Place	Barrington Street	End				$25,000	$1,930,500
25	Willard Street	Somerset Crescent	End				$12,500	$1,943,000
26	Winsor Crescent	Beanland Av	End				$20,000	$1,963,000
27	Ashgrove Terrace	Fairview Street	Ashbrook Lane				$125,000	$2,088,000
28	Ashgrove Terrace	Colombo Street	Fairview Street				$170,000	$2,258,000
29	Marley View Street	Rose Street	End				$35,000	$2,293,000
								$2,293,000

High Medium Low

PRIORITISATION

RANKING

Multi-Criteria Analysis: Overall grade is made up of three indicators:

Access: Average of five sub-indicators which reflect the place and movement function of the corridors within the study area.

Safety: Average of six sub-indicators that indicate the collective and personal risk of the corridor and the number of crashes over the past five years (2013-2018) by severity (fatal, serious, minor and non-injury).

Asset Condition: A single indicator that has been developed following detailed condition audits of the corridors. The indicator identifies the priority for treatment and is based on sub criteria including condition audits and the scope of works required.

First column identifies 'quick wins' that require further investment to resolve all of the issues identified.
Red line indicates the extent of CRAF investment (recommended option).

PRIORITY AREAS

	Priority	Street	From	To	Access	Safety	Condition	Cost	Cumulative
	30	Vienna Street	Hastings Street	Buffon Street				$195,000	$2,488,000
	31	Huxley Street	Montrose Street	Croydon Street				$1,900,000	$4,388,000
	32	Hastings Street	Jordan Street	Watham Road				$315,000	$4,703,000
	33	Longfellow Street	Southampton Street	Southey Street				$415,000	$5,118,000
	34	Southampton Street	Colombo Street	Longfellow Street				$2,150,000	$7,268,000
	35	Southampton Street	Longfellow Street	Tennyson Street				$1,600,000	$8,868,000
	36	Southey Street	Colombo Street	Longfellow Street				$1,400,000	$10,268,000
	37	Hume Street	Rogers Street	Eastern Terrace				$800,000	$11,068,000
	38	Huxley Street	Burlington Street	Montrose Street				$1,500,000	$12,568,000
	39	Buffon Street	Vienna Street	Wilsons Road				$1,300,000	$13,868,000
	40	Cecil Place	Hastings Street	End				$355,000	$14,223,000
14	41	Deloraine Street	Barrington Street	End				$35,000	$14,258,000
	42	Gibbon Street	Ingoldsby Street	Rogers Street				$1,700,000	$15,958,000
22	43	Humboldt Street	Hargest Crescent	Cameron Street				$650,000	$16,608,000
	44	Hume Street	Austin Street	Rogers Street				$1,500,000	$18,108,000
	45	Malcolm Avenue	Waimea Terrace	Birdwood Avenue				$1,200,000	$19,308,000
	46	Sandwich Rd	Waimea Terrace	Birdwood Avenue				$850,000	$20,158,000
24	47	Sefton Place	Barrington Street	End				$450,000	$20,608,000
12	48	Conway Street	Barrington Street	Lyttelton Street				$4,300,000	$24,908,000
15	49	Dominion Avenue	Milton Street	Bend				$575,000	$25,483,000
								$25,483,000	

Note: The streets outlined in the programme are indicative, and based on high level cost estimates. The Council will only deliver what it can within the available budget, and indicative programme shown may be subject to change.

High Medium Low

Christchurch City Council

Appendix D Report Cards Methodology

CRAF Report Cards Multi Criteria Analysis Methodology

The purpose of this technical note is to outline the approach to prioritising CRAF investment in the five priority suburbs based on an evidence based assessment of access, safety and asset condition data. The approach adopted was:

- Data based approach using readily available evidence;
- Only considers corridors in each area identified for condition improvements; and
- No weightings were applied to the MCA framework between the three criteria.

The prioritization of corridors in each of the five priority areas is made up of three indicators as follows:

Access

Calculated based on the average of five sub-indicators which reflect the place and movement function of the corridor. Each criteria was allocated a score of 1 if the corridors were:

- Part of a core public transport route;
- Part of a suburban or connector public transport route;
- Part of a Major Cycle Route;
- Had a school located on the corridor; and
- Had key services such as cafes, shops, doctors, dentist, church etc. located on the corridor.

The total score for each corridor was then aggregated and allocated an overall score based on the total:

- Low = a combined score of 0-1 = an access score of 0
- Medium = a combined score of 2-3 = an access score of 2
- High = a combined score of 4+ = an access score of 4

0 1	Low	0
2 3	med	2
4+	high	4

Street	From	To	Access	Core PT	Other PT	MCR	School	Other	Total
Baker Street	New Brighton Road	Bowhill Road	0	0	0	0	0	0	0
Beresford Street	Hardy Street	Owles	4	1	1	0	1	1	4
Beresford Street	Union Street	Hardy Street	2	1	1	0	0	1	3
Beresford Street	Oram Ave	Union Street	2	1	1	0	0	1	3

Safety

Calculated based on the average of six sub-indicators which indicate the collective and personal risk and the number of crashes by severity (fatal, serious, minor and non-injury). Each criteria was allocated a score as follows:

- Level of collective and personal risk:
  - Low = 0
  - Low-Medium = 1
  - Medium = 2
  - Medium-High = 3
  - High = 4

Personal and Collective risk	
low	0
low-med	1
med	2
med-high	3
high	4

- Number of crashes record on the corridor over a five year period:
  - Fatal crash = 4 (per fatal crash)
  - Serious = 3 (per serious injury crash
  - Minor = 2 (per minor injury crash)
  - Non-injury = 1 (per non-injury crash)

The total score for each corridor was then aggregated and allocated an overall score based on the total:

- Low = a combined score of 0-5 = a safety score of 0
- Medium = a combined score of 6-10 = a safety score of 2
- High = a combined score of 10+ = a safety score of 4

low	0 5	0
med	6 10	2
high	10+	4

						4	3	2	1	
Street	From	To	Safety	Collective Risk	Personal Risk	Fatal	Serious	Minor	Non-injury	Total
Baker Street	New Brighton Road	Bowhill Road	2	0	2	0	0	2	3	7
Beresford Street	Hardy Street	Owles	0	0	0	0	0	0	1	1
Beresford Street	Union Street	Hardy Street	0	0	0	0	0	2	1	3
Beresford Street	Marine Parade	Oram Ave	0	0	0	0	0	0	0	0

Condition

A single indicator that has been developed following detailed condition audits of the corridors, to determine the priority for asset improvements as follows:

Street	From	To	Priority
Baker Street	New Brighton Road	Bowhill Road	0
Beresford Street	Hardy Street	Owles	4
Beresford Street	Union Street	Hardy Street	2
Beresford Street	Marine Parade	Oram Ave	0

0-3 years	high	4
3-10 years	med	2
11+	low	0

Overall Ranking

Based on an average of the three indicators and overall ranking was calculated for each corridor.

Street	From	To	Overall Priority	Safety	Access	Condition
Baker Street	New Brighton Road	Bowhill Road	0.67	2	0	0
Beresford Street	Hardy Street	Owles	2.67	0	4	4
Beresford Street	Union Street	Hardy Street	1.33	0	2	2
Beresford Street	Marine Parade	Oram Ave	0.67	0	2	0

Locations have then be ranked (sorted) according to the following three filters:

1) Priority score (average of the three indicators)
2) Condition rating indicator
3) Street name A-Z

Priority	Street	From	To	Priority	Access	Safety	Condition
1	Keyes Road	Hawke Street	Bowhill Road	3.33			
2	Seaview Road	Hardy street	Union Street	3.33			
3	Beresford Street	Hardy Street	Owles	2.67			
4	Marine Parade	Hawke Street	Lonsdale Street	2.67			
5	Bowhill Road	Keyes Road	Marine Parade	2.00			

The overall grade and individual grades (access, safety and condition) shown on the report card front page is based on the lowest score recorded for each of the three criteria. So if one street has a red for safety then the overall grade for safety in the suburb is red.

Appendix E Road Safety Action Plan

Road Safety Action Plan

Christchurch City, July 2018 – June 2019

Goal: To enable collaborative planning among road safety inter-agencies to reduce deaths and serious injuries on Christchurch City roads

Christchurch City Council

ACC PREVENTION. CARE. RECOVERY. Te Kaporeihana Āwhina Hunga Whara

Christchurch Transport Operations Centre

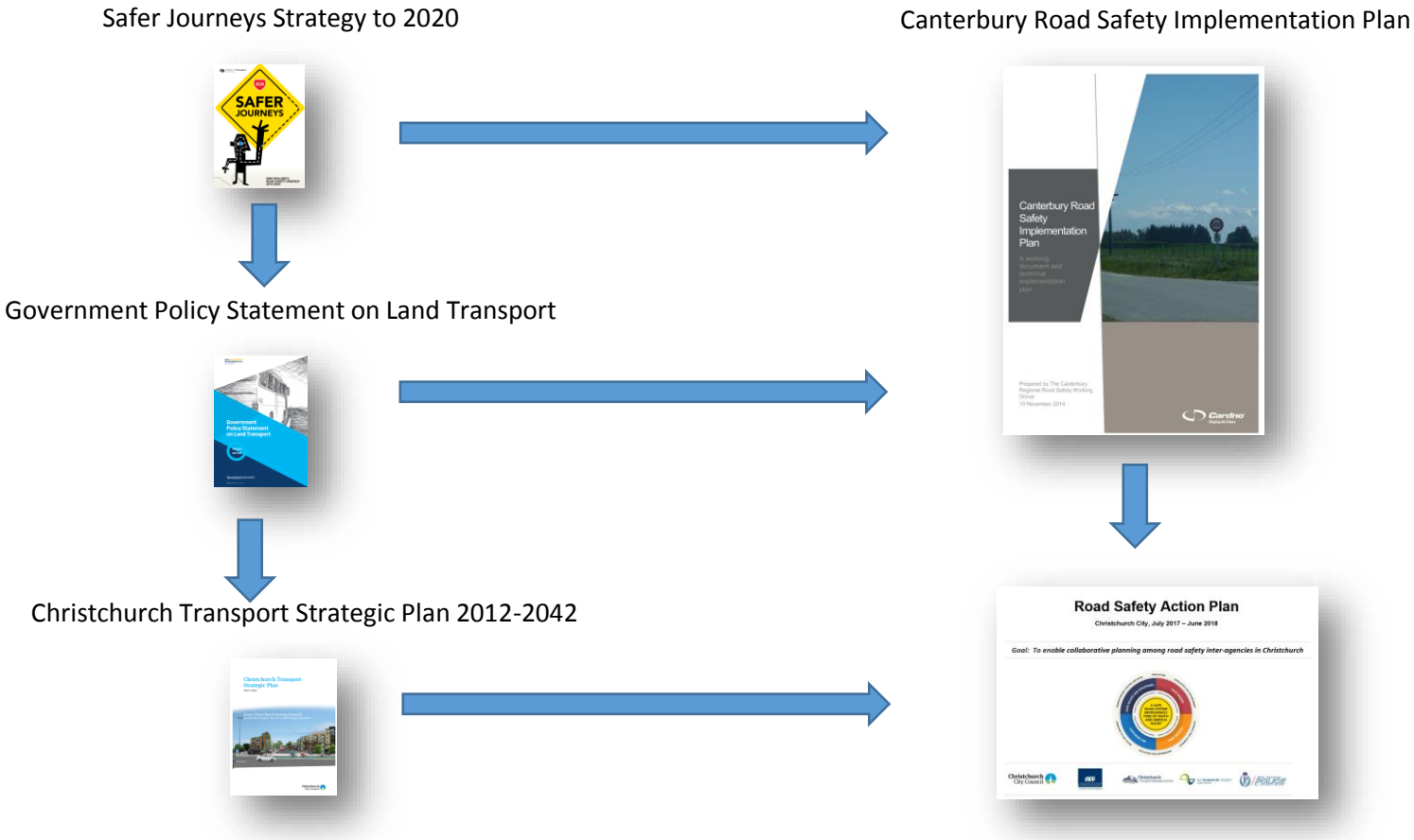
New Zealand POLICE Nga Pirihimana O Aotearoa

Safer Journeys

1 TRIM Reference: 18/402799

Introduction

The **Christchurch City Road Safety Action Plan** (RSAP) has contributing agency members representing Christchurch City Council, Christchurch Transport Operations Centre (CTOC), New Zealand Transport Agency (NZTA), ACC and Canterbury Road Policing. The group have agreed to work together to develop an action plan specific to the needs of Christchurch City in accordance with the principles and vision of the **Canterbury Regional Land Transport Plan**, the **Regional Road Safety Working Group Action Plan**, the **Christchurch Transport Strategic Plan 2012-2042** and the Government's road safety strategy to 2020, **Safer Journeys**. The following diagram outlines this strategic context:



Safe System approach

The Safe System approach outlined in Safer Journeys, the Government's current Road Safety Strategy, aims for a *more forgiving road system* that *takes human fallibility and vulnerability into account.* Under a Safe System we design the whole transport system to protect road users from death and serious injury. We accept that:

- *People make mistakes* - We need to recognise that road users make mistakes and some crashes are inevitable.
- *Road users are vulnerable* - Our bodies have a limited ability to withstand crash forces without being seriously injured or killed.
- *We need to share responsibility* - Those who design the road system and those who use the roads must all share responsibility for creating a road system where crash forces don't result in death or serious injury.
- *We need to strengthen all parts of the system* - We need to improve the safety of all parts of the system - roads and roadsides, speeds, vehicles, and road use - so that if one part fails, other parts will still protect the people involved.

The Strategic links, targets and priorities for the Road safety Action Plan reflect the objectives and outcomes of the government's national road safety strategy Safer Journeys using the Safe System Approach:

- Safe speeds
- Safe vehicles
- Safer road use
- Safer roads and road sides.

Under the Safe System approach, all system designers must share the responsibility for road safety outcomes. Safer Journeys is implemented through a series of action plans such as this document, which allocate responsibilities to transport sector partners.

Government Policy Statement on Land Transport (GPS)

The Government Policy Statement on Land Transport (GPS) sets out the government's priorities for investment in transport network. A new GPS is released every 3 years and provides a 10 year horizon. It guides the NZ Transport Agency and local government on the type of activities that should be included in Regional Land Transport Plans and the National Land Transport Programme (NLTP).

A new draft GPS was released for consultation in 2018, featuring an enhanced emphasis on road safety and a commitment to developing a new road safety strategy beyond 2020.

Regional Road Safety Working Group (RRSWG)

The Canterbury Regional Road Safety Working Group functions as a subcommittee of the Canterbury Regional Transport Committee and oversees the implementation of the Canterbury Road Safety Implementation Plan. Members share information and provide leadership to promote a Canterbury road system increasingly free of death and injury.

Christchurch Transport Strategic Plan 2012-2042

The Christchurch Transport Strategic Plan details the transport actions for Christchurch City, including rural areas of Banks Peninsula, that are required to create a transport system to support the city's growth and community aspirations during the next 30 years (2012–2041). The vision is to *keep Christchurch moving forward by providing transport choices to connect road users and places.*

The four goals within the plan are as follows:

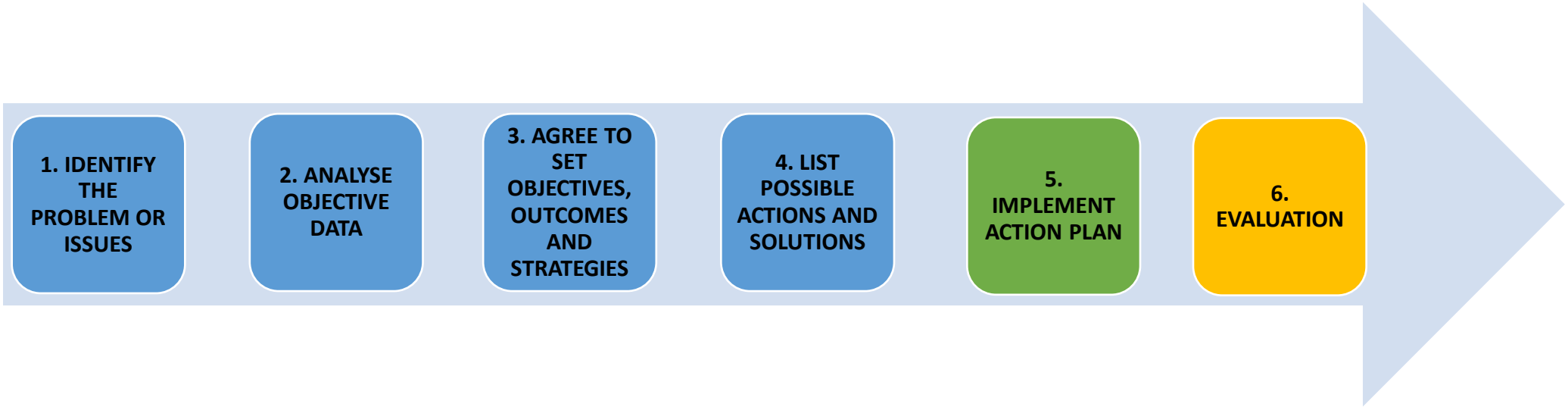
1. Improve access and choice
2. Create safe, healthy and liveable communities (*adopting a 'safe system' approach, as outlined earlier*)
3. Support economic vitality
4. Create opportunities for environmental enhancements

RSAP Governance/Management

The RSAP is developed by the agency members in a collaborative manner to address local road safety issues across infrastructure, road user safety and enforcement. The members will meet to agree on objective data, verify, scope and evaluate programmes of work using the safe system approach at a local level. The **Christchurch City Road Safety Action Plan Steering Group** includes representatives from CCC Road Safety Education, CCC Traffic Operations, CTOC, NZTA, ACC and Canterbury Road Policing. The group meets on an agreed frequency to ensure collaboration in the development, implementation and monitoring of each year's plan.

Process

The end-to-end process for developing, implementing and evaluating a Road Safety Action Plan is outlined below. Detail on the approach taken for this year's process follows.



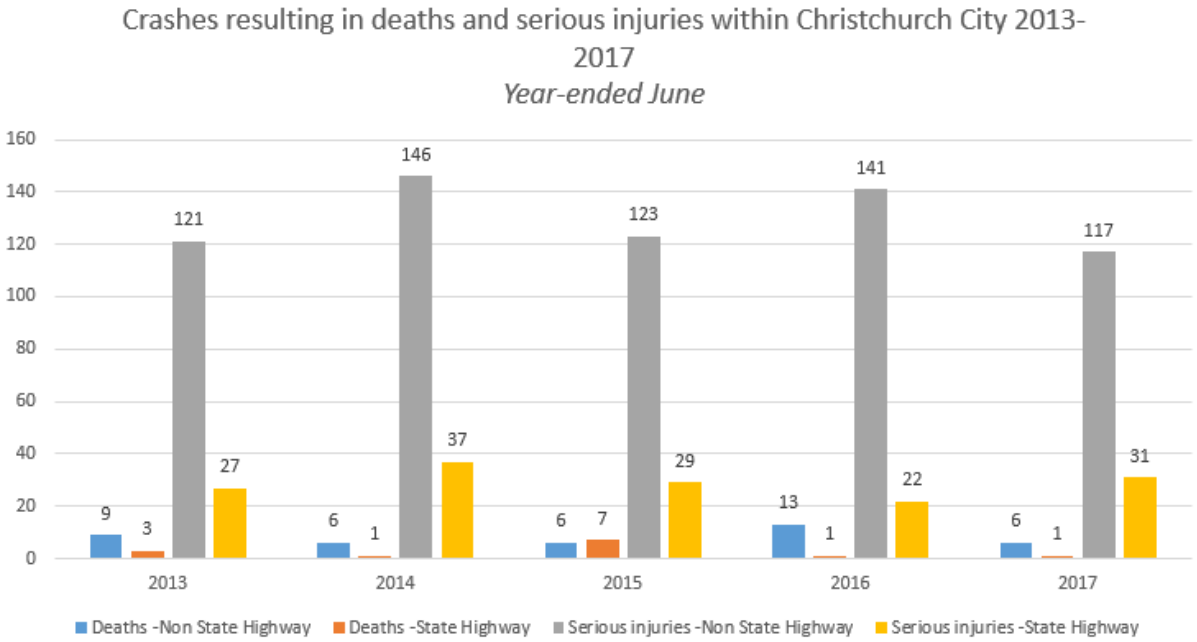
1. IDENTIFY THE PROBLEM OR ISSUES

2. ANALYSE OBJECTIVE DATA

The process for identifying and prioritising risk factors for this Road Safety Action Plan was to re-evaluate existing priorities using updated information sources, and to consider areas raised within the Steering Group as emerging issues observed within their areas.

The Crash Analysis System (CAS) data on *crashes* resulting in death and serious injury was used as the primary source of analysis, covering the period July 2012-June 2017. Multiple years were needed for the analysis, as a single year's information is not enough to robustly draw conclusions on the main risk factors to be addressed. Over the period being analysed there were a total of 847 crashes that resulted in death or serious injury. This included 53 crashes resulting in deaths.

While the analytical focus is on the full five year period, it is still important to identify trends over the period. As the following chart shows, there was an overall reduction in crashes resulting in deaths and serious injuries over 2017, however there is not a clear downward trend over the period. Moreover, the 2017 reduction does not apply when crashes occurring within neighbouring districts are included and this needs to be acknowledged in regional planning. This is increasingly important as the number of commuting journeys crossing territorial boundaries increases, with more crashes occurring at peak commuting times.



The trends in recent years also need to be considered in the context of CCC's road safety Level of Service, as outlined in the Draft Long Term Plan:[1]

Description	Method of Measurement	Current performance	Future performance		
			2018/19	2019/20	2020/21
Reduce the number of casualties on the road network	The number of deaths or serious injuries from all crashes on the local road network per calendar year.	2017 134 deaths and serious injuries	≤129 (reduce by 5 or more per year)	≤124 (reduce by 5 or more per year)	≤119 (reduce by 5 or more per year)

[1] Please note that these figures do not match the overall summary presented in the previous chart as CCC's target is based on deaths and serious injuries within a calendar year and excludes those parts of the network out of the Council's network, such as State Highways and private carparks.

Collectively, the actions outlined later in this document contribute to achieving this goal, as well as the broader objectives of improving road safety across the whole network.

From the analytical process the following risk areas were identified and prioritised:

Key risk areas in Christchurch City	➢ Safety for all road users at Intersections ➢ Speed when driving ➢ Safety for road users cycling and walking ➢ Safety for road users motorcycling ➢ Young road users driving
Ancillary risk areas	➢ Alcohol/Drug use when driving
Developing/emerging risk areas:	➢ Safety for older road users (those aged 75 years and older)

It is important to note that while the risk areas noted above refer to groups of mode users, or road configuration (intersections), it is also the underlying *behaviours* that create these risks that specific interventions look to address.

The following table provides some statistics on the key risk areas are outlined below. Further analysis will of course be undertaken as part of the development of specific interventions:

Key Risk area	***Key statistics***
Safety for everyone at intersections	427 of crashes resulting in deaths and/or serious injuries were at intersection, comprising 50% of the total. Of these: • 193 (45%) were on 'T' intersections • 176 (41%) were on 'X' intersections • 153 (36%) were at intersections with traffic signals • 59 were at intersections with stop signs • 154 were at intersections with give way signs • 47 were at roundabouts

Speed when driving	104 crashes involving death and/or serious injury where driving "too fast" was recorded as a contributing factor. Of these: • 22 were on State Highways • 74 were 'Mid block' (not at intersections)
Safety for road users cycling and walking	167 Of crashes involving death and/or serious injury involved cyclists over period. 134 crashes resulting in deaths and/or serious injuries involved pedestrians (16%)
Safety for road users using motorcycles and mopeds	179 death/serious injury crashes involving motorcycles (137) or mopeds (42). Note that this only includes crashes within Christchurch City.
Safety for young road users driving	Of the 847 crashes where a driver was culpable, 208 (25%) were cases where that driver was 25 or under. of these: • 154 were crashes with a male driver culpable • 90 of all drivers at fault were either on their Learner (35) or Restricted licence (55)

It is important to note that none of these risk areas are mutually exclusives, and any interventions need to be undertaken in a holistic manner.

3. AGREE TO SET OBJECTIVES, OUTCOMES AND STRATEGIES

4. LIST POSSIBLE ACTIONS AND SOLUTIONS

The strategic context of this document is outlined in the introduction. To identify the Christchurch-specific focus within this framework, the the following considerations have been factored into the development of this action plan:

- Trend analysis against targeted and objective data.
- Evidence based agreement on the risk and tactics to address both short and longer term programme of work.
- Reduction in risk to road users in Christchurch using road infrastructure.
- An agreed programme of work to meet the RSAP objective.
- Alignment with RRSWG outcomes.
- Opportunities for increased alignment on activity between contributing agencies.
- Adoption and promotion of the RSAP to relevant partner agencies and sectors.

The list of actions for each risk area is outlined at the end of this document.

5. IMPLEMENT ACTION PLAN

An agreed programme of work and projects for each area identified will be coordinated and completed as per the action plan in the appendix of this RSAP in collaboration by each contributing interagency.

Each programme of work has assigned accountabilities and responsibilities and progress against the plan is to be reviewed at each meeting.

6. EVALUATION

Specific evaluation criteria is outlined for each of actions outlined at the end of this document.

- CAS Data
- Reduction in crashes resulting in deaths and serious injuries, as per the CCC Level of Service outlined within this document
- Reductions for each of the five key areas will be assessed as part of evaluation of this plan.
- Review activity and results

Road Safety Action Plan: Confirmed Activity

Key Risk Area: Safety for everyone at intersections

Target Groups
All road users
Strategic Linkages / Documents / References
Police Risk Profile, Safer Journeys Action Plan, Christchurch Transport Plan 2012-2042 (page 54),NZTA Communities At Risk Register
12 month focus
• Develop safe systems intervention for high risk sites • Intersection enforcement • To educate and influence road users driving on safe behaviour at intersections (addressing factors such as red/yellow light running)
Target Locations
Urban City network with focus on signalised intersections

Interventions

Safe System Approach -	Actions	Success Indicators / KPI's / Outcomes	Dates	Collaborative Agency / Road safety partners / Stakeholders Responsible
Safer Roads & Road Sides	Engineering improvements to high crash prone intersections including capital programmes and minor improvements to make roads safety and deliver safer road sides. This includes the introduction of more 'turning arrows' at intersections.	Reports on engineering improvements delivered within programme that contribute to reduction in death and serious crashes at intersections.	Ongoing	CCC
	Real-time transport operations including temporary traffic management activities	CTOC Performance measures	Ongoing	CTOC
Safe Road Use - Police Enforcement	Enforcement carried out by Police Motorcycle team. Focus on amber lights, red lights and stop signs (Christchurch Metro), stop signs and give way signs (Canterbury Rural)	Key areas: Speed Impaired Driving Restraints	Year-round, with increased enforcement at times of CCC	Police

		Distracted driving	intersection safety education	
	Trial of Red Light Camera in Christchurch	Report of outcomes of trial and recommendations for roll-out. CCC progressing process towards enforcement, in conjunction with Police.	From Winter 2018	CCC/Police
Safer Road Use -Education	CCC to prioritise intersection safety as a major theme for all education and awareness activities. A campaign focusing on addressing behaviours that lead to yellow/red light running to be developed. *Note that Young Driver education will have focus on intersection safety, including distraction in 2019*	TBC based on findings of research into most effective interventions	TBC	CCC
Safer Road Use - Education	NZTA including 'distractions' as one of the themes of the 2018/19 national advertising calendar, one of the key issues in intersections.	Post campaign analysis	September, March, June	NZTA

Key Risk Area: Speed when driving

Target Groups
All drivers
Strategic Linkages / Documents / References
Police Risk Profile, Safer Journeys Action Plan, Christchurch Transport Plan 2012-2042,NZTA Communities At Risk Register
Objectives of this Activity
A. Reducing speed that are excess to speed limits or otherwise inappropriate
Locations
Christchurch wide

Interventions

Safe System Approach -	**Actions**	**Success Indicators / KPI's / Outcomes**	**Dates**	**Collaborative Agency / Road safety partners / Stakeholders Responsible**
Safe Road Use - Police Enforcement	Targeted enforcement of excess speed. Location informed by risk analysis and public complaints. Engagement with partner agencies to seek longer term solutions to identified issues, recognising that enforcement is only ever a short term fix.	Reduced crashes involving speed as a factor Collaborative planning with partner agencies	Year-round	Police
Safe Speeds	Review of speed management and subsequent implementation of safe and appropriate speeds.	Delivery over year and subsequent monitoring of safety outcomes.	Year-round	CCC
Safer Road Use - Education	NZTA including speed as one of the themes of the 2018/19 national advertising calendar	Post campaign analysis	August, November, January, May	NZTA

Key Risk Area: Safety for road users cycling and walking

Target Groups
All road users cycling and walking
Strategic Linkages / Documents / References
Police Risk Profile, Safer Journeys Action Plan, Christchurch Transport Plan 2012-2042 (page 54),NZTA Communities At Risk Register
Objectives of this Activity
• Raise awareness of the safest routes for road users cycling, depending on their confidence • Raise awareness of safety and visibility of road users cycling including blind spots for larger vehicles • Families of school age child provided with road safety information around child pedestrians and cyclists • School patrollers empowered to become road safety leaders within school communities • Encourage the development of a culture of alert, safe and courteous behaviour by pedestrians on footpaths and when crossing roads.
Locations
• Full network, with focus on areas with significant cycling and walking

Interventions

Safe System Approach -	**Actions**	**Success Indicators / KPI's / Outcomes**	**Dates**	**Collaborative Agency / Road safety partners / Stakeholders Responsible**
Safer Roads & Road Sides	Development of improved major cycle-ways as in CCC Long Term Plan, with education to encourage safe use.	Improved public perception that Christchurch is a cycle friendly city Implementation of major cycle-ways and minor improvements to the cycle network Safe and appropriate speed limits for all users.	Throughout year	CCC
	Safety improvements to cycle network within the minor improvements programme as in the CCC Long Term Plan.	Reports on engineering improvements delivered within programme that contribute to reduction in death and serious crashes at intersections.	Throughout year	CCC
	Road User Workshop support for truck/bus/cycle safety awareness	Completed course(s) over the year and user feedback	Year round, as required	CCC/NZTA/Cycling Action Network

Safer Road Use - Education				
	School travel planning services to primary schools, promoting safe travel to schools with a focus on safe walking and cycling	Travel plans (or associated support) completed, feedback from schools	Throughout the school year	CCC
	Cycle Safe in schools cycle skills programme targeting year 6 students in collaboration with NZ Police. Grade 1 & 2 of NZTA cycle skills delivery guidelines	Number of students put through training. Evaluation from schools & students	Throughout school year	CCC/ NZTA/ ACC
	Cycle safety workshops with CBD offices, as part of Greater Christchurch Group engagement on travel choice	Attendance and evaluation	From Spring 2018	CCC/Greater Christchurch Partnership
	Walk & Wheel School active transport safety event for schools	School participation levels	February 2019	CCC
	Revised print/online cycling maps, outlining safe routes across the city	Website hits & feedback/demand	Spring 2018	CCC
	NZTA including cycling as one of the themes of the 2018/19 national advertising calendar	Post campaign analysis	TBC	NZTA

Key Risk Area: Safety for road users motorcycling

Target Groups				
All motor scooter and motorcycle riders				
Strategic Linkages / Documents / References				
Police Risk Profile, Safer Journeys Action Plan, Christchurch Transport Plan 2012-2042 (page 54),NZTA Communities At Risk Register				
Objectives of this Activity				
Reinforce safety information and key messages that will help riders take responsibility for their own actions on the road to keep safe. Encourage motorcycle and moped users to take Ride Forever training to ensure to minimise their risk of a crash, or a crashes severity				
Locations				
Christchurch wide				
Interventions: **Safe System Approach -**	**Actions**	**Success Indicators / KPI's / Outcomes**	**Dates**	**Collaborative Agency / Road safety partners / Stakeholders Responsible**
Safe Road Use - Police Enforcement	Police led initiative targeting drivers in breach of their graduated licence offering compliance. Drivers are offered compliance to engage with a provider to obtain the next class of licence	Drivers that obtain next class of licence	Year-round	Police
	Operation 'MATAKI' enforcement targeted at motorcycle riders on State Highways (1, 7, 72, 73, 75, 77 and 79).		Summer	Police
Safer Road Use - Education	Collaborative road safety event 'Kick Start' with Police, ACC and professional trainers promoting riders taking responsibility for their own safety through upskilling	Attendance, engagement in safety demonstrations and overall feedback	September 2018	CCC/ Police (with cross-agency Kick Start organising committee)
	Motorcycle Awareness Month, Summer campaign	ACC post campaign analysis	October 2018	ACC
	Ride Forever Motorcycle & Scooter Training	Riders who access Ride Forever	Year-round	ACC
	NZTA including motorcyclists as one of the themes of the 2018/19 national advertising calendar	Post campaign analysis	November-December, February-April	NZTA

Key Risk Area: Safety for young road users driving

Target Groups
• 16-25 years • Graduated Drivers Licencing System (GDLS) Drivers
Strategic Linkages / Documents / References
Police Risk Profile, Safer Journeys Action Plan, Christchurch Transport Plan 2012-2042 (page 54),NZTA Communities At Risk Register
12 month focus
Raise young driver awareness of the risk associated with driving, distractions and peers Raise driver awareness of the risks associated with licence breach
Target Locations/demographics
Greater Christchurch secondary schools Drivers on learner and restricted licence classes

Interventions

Safe System Approach -	Actions	Success Indicators / KPI's / Outcomes	Dates	Collaborative Agency / Road safety partners / Stakeholders Responsible
Safe Road Use - Police Enforcement	Police led initiative targeting drivers in breach of their graduated licence offering compliance where drivers engage with a service provider to obtain the next class of licence	Drivers that obtain next class of licence	Year-round	Police
Safer Road Use - Education	Crash Bash young Driver programme which tours secondary schools	Number of students reached, feedback from schools	February-March 2019	CCC/Police
	Link with and utilise the learner and young driver resource 'Drive'	Website hits	TBC	ACC
	Learner Driver Mentoring Programme	Number of students that obtain learner licence.	5 programmes through the year	Police

	NZTA including speed as one of the themes of the 2018/19 national advertising calendar	Post campaign analysis	September, November, January, May	NZTA
	Launch and promotion of Drive Community toolkit to support community providers of driver education and licensing courses. Promotion of Drive website	Post launch analysis on uptake and usage	2018	ACC

Ancillary Risk Area: Alcohol/ drug use when driving

Interventions

Safe System Approach -	Actions	Dates	Collaborative Agency / Road safety partners / Stakeholders Responsible
Safe Road Use - Police Enforcement	Various Police Operations throughout year, including • Operations primarily aimed at rugby clubs, encouraging social responsibility in relation to making safe driving choices. • Operations Labour Weekend, Show Week and leading up to Easter Weekend • Operation focused on the prevention of alcohol related offending. General focus on prevention and detection of alcohol related offending	Year-round	Police, with support of CCC Education (collateral) where agreed
Safer Road Use - Education	NZTA including alcohol and drugs as one of the themes of the 2018/19 national advertising calendar	July, October, December, March, April, June	TBC

Developing/ emerging risk area: older drivers

Interventions

Safe System Approach -	Actions	Dates	Collaborative Agency / Road safety partners / Stakeholders Responsible
Safer Road Use - Education	Development of a comprehensive strategy to effectively engage with older drivers. Engagement	Development completed October, followed	Police

	with partner agencies to explore intervention points and deliverables.	by implementation	
	Positive Aging Expo involvement	Spring 2017	Police running stall with support from CCC through collateral. Age Concern organising event.
	Support for Age Concern's Driving courses	Year-Round	CCC & Police

Appendix F Road Safety Improvements

Location	Gen traffic 5 years (2014-2018)				Ped/Cycle 10 years (2009-2018)			
	Fatal	Serious	Minor	Non-Injury	Fatal	Serious	Minor	Non-Injury
Theme 1- Intersection, safe system treatments (vision zero)								
Marshs Road / Springs Road	-	1	7	10	1	-	-	-
Alloy Street / Blenheim Road / Epsom Road / Main South Road	-	2	15	56	-	1	1	-
Cashmere Road / Centaurus Road / Colombo Street / Dyers Pass Road	-	2	3	-	-	5	8	2
Pound Road / Ryans Road	1	1	2	4	-	-	1	-
Mcleans Island Road/Pound Road	-	-	5	4	-	-	-	-
Pound Road / Savills Road	-	3	-	-	-	-	-	-
Cavendish Road / Styx Mill Road	-	-	3	1	-	-	1	-
Linwood Avenue / St Johns Street	-	-	4	4	-	1	2	1
Guthries Road / Marshland Road	-	1	4	-	-	-	-	-
Division Street / Riccarton Road	-	-	2	2	-	3	1	-
Theme 2 - School safety								
Burnside High School crossing and footpath improvements (crossing on Memorial Avenue)	-	-	2	8	-	1	4	-
Crossing for Polytech (ARA) Madras Street	-	-	-	5	-		2	-
Theme 3 - Red light running initiatives								
Ferry Road / Moorhouse Avenue	-	-	-	2	-	-	-	-
Fitzgerald Ave / Gloucester St	-	1	5	13	1	-	2	-
Theme 4 - Speed Management								
Ensors / Aldwins / Buckleys Speed Management (from Linwood Av to SH76)	1	8	9	48	-	7	13	2
Aldwins Road	1	2	3	19	-	3	7	-
Ensors Road	-	6	6	29	-	4	6	2
Yaldhurst Village area speed limit review								
yalhurst road McDonalds (1)	-	-	1	2	-	-	-	-
Pound to Haskett (2)	-	1	5	9	-	-	1	-
Pound road (minus roundabout) (3)	1	1	4	9	1	1	1	-
Ryans Road (4)	-	1	-	-	-	-	-	-
Haskett Road (5)	-	-	-	-	-	-	-	-
School Road (6)	-	-	-	-	-	-	-	-
West Coast Road + intersection (7)	-	1	1	7	-	1	-	-
Theme 5 - Signalised intersections and right turn safety								
Whiteleigh-Barrington/Lincoln	-	3	4	13	1	-	6	-
Greers-Harewood	-	1	5	12	-	2	4	4
Ferry-Moorhouse	-	2	2	13	-	1	4	3
Breezes-Pages	-	-	4	7	-	1	2	1
Manchester-Moorhouse	-	1	4	9	-	-	-	-
Colombo-Milton-Huxley	-	-	5	13	-	1	3	-
Lincoln-Moorhouse	-	-	3	16	-	2	3	3
Antigua-Moorhouse	-	-	2	13	-	2	7	1
Breezes-Wainoni	-	-	1	1	1	-	2	-
Chappies-Main South	-	1	1	2	-	-	1	-
Hills-Shirley/Warrington	-	2	1	4	-	1	4	1
Theme 6 - Active speed management								
Hills Road / Shirley Road / Warrington Street	-	2	1	4	-	1	4	1
Marshland Road / Prestons Road	-	1	3	16	-	3	2	-
Theme 7 - Route treatments - minor safety								
Marshland Road from Spencerville Road to QE2 Drive	-	8	39	70	-	4	2	1
Riccarton Road from Yaldhurst/Main South intersection to Middleton Road	-	1	14	35	-	1	7	2
Memorial Ave from Greers Road to Clyde Road	-	3	8	36	-	2	6	-
Summit Road from Worsleys to far side of Dyers Pass intersection (to include this intersection)	-	2	4	5	-	-	-	-
Theme 8								
Monks Bay - Safety fence - from property no 226a to existing safety fence at the 90 degree corner	-	-	-	-	-	1	-	1
Cashmere Road - ped refuge - outside Princess Margaret Hospital)	-	-	-	-	-	-	-	-
Zebra crossing on Hereford Street at Civic Offices	-	-	-	-	-	-	-	-

Appendix G Benefit Cost Ratio Analysis

Memorandum

25-Oct-19

To	Christchurch City Council		
Copy to			
From	GHD	Tel	03 378 0900
Subject	Economic evaluation assessment	Job no.	125/041/53

1 Introduction

This memorandum documents the outcomes of the economic evaluation component of the Christchurch Regeneration Acceleration Facility Transport Investment Case. It discusses the do-minimum and preferred option, economic efficiency, and details the assumptions and decisions used within the calculations.

1.1 Preferred Option

There are two conditions that were assessed, the do-minimum and the preferred option. These are defined by safety and suburb specific integrated safety, modal choice and asset improvements at various parts of the network. Targeted public transport improvements have been evaluated outside of this assessment.

Table 1: Option configuration

Option	Community improvements	Targeted safety improvements	Targeted public transport improvements
Do-minimum	Maintain current condition of roads in communities	No additional targeted safety improvements	No additional targeted public transport improvements
Preferred option	Community safety and access improvements to specific corridors in New Brighton, Linwood – Woolston, Spreydon, Somerfield, Waltham and Beckenham, Riccarton and Richmond	Various intersection improvements, school safety, red light running enforcement, speed management, speed limit review, right turn safety, and minor safety improvements	The implementation of bus priority measures on one of the key public transport routes in the city

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2 Preferred option economic evaluation

This section details the criteria assessed and the assumptions that have been applied.

2.1 Inclusions

The Christchurch Regeneration Acceleration Facility economic evaluation considered vehicle operating costs (road roughness), and safety user costs. Construction costs were estimated for the do-minimum and the preferred option. Public transport improvement benefits under the targeted public transport improvements theme were not calculated in this economic assessment, as these benefits will be included and assessed as part of the PT Futures workstream.

2.2 Evaluation summary

An evaluation summary table is provided in Table 4 below. The economic evaluation assumes a:

1. Construction start date of July 2021
2. Construction duration of 36 months
3. Time zero of 2021
4. Base date of 2018
5. Discount rate of 6%
6. 40 year benefit period

2.3 Annual average daily traffic (AADT) and expansion factors

7. AADT traffic figures for each street named in the preferred option were sourced from the Christchurch City Council RAMM database.
8. An annual arithmetic traffic growth rate of 0.5% has been assumed for this economic evaluation. This annual growth rate is the annual average vehicle kilometres travelled growth rate for Urban Local Roads in Christchurch City between 2007/08 and 2016/17. Sourced from https://www.nzta.govt.nz/assets/userfiles/transport-data/VKT.html

2.4 Vehicle operating user costs

Vehicle operating user costs considered costs due to local road roughness.

9. Vehicle operating costs assume **urban** additional VOC (cents per km) based on NAASRA roughness levels. The NAASRA VOC (cents per km) were sourced from Table A5.14 Additional VOC due to roughness, where the cost value of roughness was determined by rounding NAASRA values up to the next highest reported value in the table.
10. Current NAASRA values were sourced from RAMM for the streets receiving community improvements. Where no values were available, average NAASRA roughness of the suburb is used.
11. Future NAASRA values were assumed based on the road hierarchy.
12. Length of corridors for treatment were sourced from RAMM
13. Annual vehicle kilometres travelled for each street was calculated by multiplying the AADT by the length of the section of road being treated and 365 days of the year. This assumes each vehicle travelling on the road travels the length of the area being treated.
14. Update factor: 1.07 was applied to the VOC to adjust 2015 cost values to current values.

2.5 Crash user costs

The study area was broken into treatment areas by theme or geographic area, and then by street, with the crashes within each section considered. Each section was assessed independently using Method A methodology from the NZTA EEM (Pg 5-297). It is noted that Method A is not the most appropriate approach for all treatment locations but it was applied for a consistent assessment.

15. Crash history period from 2014-2018 for vehicle crashes.
16. Crash history period from 2009-2018 for crashes involving vulnerable road users (pedestrians and cyclists).
17. Method A procedure used for all crash users benefit calculations for the preferred option.
18. Traffic growth rate of 0.5% per annum was assumed based on the 10 year history of the Christchurch City vehicle kilometres travelled average annual growth rate.
19. Update factor: 1.06 was applied to the VOC to adjust 2015 cost values to current values.

Method A assessments

20. All crash costs were assessed using Method A and associated values for crash costs per year
21. Separate assessments were completed for vulnerable user crashes and all other crashes.
22. Crash costs in Method A assumed the posted speed limit as the operating speed.
23. Fatal/serious severity ratios were linearly adjusted based on the posted speed limit.
24. Adjustment factors were linearly proportioned for high speed locations based on the 0.5% growth.
25. Underreporting factors used 50, 60, 70 km/h and 80 / 100 km/h factors.
26. For all crashes, crash costs used the all movements all vehicles value.
27. Mean speed adjustment assumed the posted speed limit is the operating speed.
28. Proposed work for all areas and themes of the preferred option is not a fundamental change and options were considered using Method A.
29. Crash reduction factors for the preferred option themes are outlined in Table 2. The assumed crash reductions are based on crash reduction data for improvement activities from the Crash Compendium, High Risk Intersection Guide, and Standard Safety Intervention Toolkit. In many instances conservative crash reduction rates were utilised where numerous potential treatment options could be applied.

Table 2 Preferred option crash reduction rates

Theme	Assumed Crash Reduction Rate
Suburban treatments: New Brighton, Linwood – Woolston, Spreydon, Somerfield, Waltham & Beckenham, Riccarton and Richmond	0.15
Theme 1: Intersection, safe system treatments (vision zero)	0.3
Theme 2: School safety	0.325
Theme 3: Red light running initiatives	0.23
Theme 4: Speed management	0.3
Theme 5: Signalised intersections and right turn safety	0.275
Theme 6: Active speed management	0.25
Theme 7: Route treatments – minor safety	0.15
Theme 8: Community safety initiatives	0.15

2.6 Costs

30. The do minimum does not have a construction cost.

31. All construction, design, and property costs for the preferred option were assumed to occur over 36 months from 2021 (see Table 3).

32. It is assumed all construction, design and property costs are split evenly across these three years of construction.

33. No maintenance costs have been applied for either of the options (do minimum or preferred option).

34. Inflation and escalation has not been included in maintenance or cost estimate values.

Table 3: Programme capital costs

Option	**Capital Cost**						
	Safety	**New Brighton**	**Linwood-Woolston**	**Spreydon, Somerfield, Waltham and Beckenham**	**Riccarton**	**Richmond**	**Totals**
Do-minimum	$0	$0	$0	$0	$0	$0	**$0**
Preferred Option	$5,000,000	$6,677,500	$5,103,500	$5,118,000	$6,990,000	$5,879,500	**$34,768,500**

2.7 Benefits and Discounting

35. The do minimum costs values are assumed to apply to the preferred option for the first three years, years 1, 2 and 3 while design and construction occurs.

36. Full do minimum costs apply to the preferred option in year 1, two thirds of annual costs in year 2 and one third of annual costs in year 3 to account for construction completed on corridors as the project progresses.

37. Crash user costs increase at the 0.5% traffic growth rate considering the corridor is urban.

38. A modification to the traffic growth rate of -1% is assumed as majority of the preferred option study area has a posted speed of 50 km/h or 60 km/h.

39. The final year of economic evaluation is 2059.

2.8 Summary Section

The recommended option project expected cost estimate is **$34,768,500** over three years (July 2021 to July 2024).

Table 4 Economic summary

Timing		
Earliest Implementation Start Date	Construction start July 2021	
Expected Duration of Implementation	Construction duration 36 months	
Economic Efficiency		
Time Zero	1 July 2021	
Base date for Costs and Benefits	1 July 2018	
Present Value net Total Project Cost of Recommended Option	$ 31.9 M	
Present Value net Benefit of Recommended Option	$ 139.9 M	
BCR (exc. WEBs)	**4.4**	
User Costs and Benefits		
	Present Value Costs	
	Do Min	**Recommended Option**
Vehicle Operating user costs	$ 38.5 M	$ 4.2 M
Crash user costs	$ 412.5 M	$ 306.9 M
Present Value - total net user costs / benefits	$ 451.1 M	$ 311.1 M

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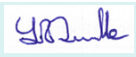
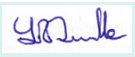
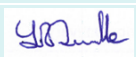
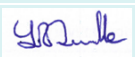
Rev.No.	Author	Reviewer Name	Signature	Approved for Issue Name	Signature	Date
01	A Smith	L Dowdle		L Dowdle		12.09.2019
02	A Smith	L Dowdle		L Dowdle		31.10.2019

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