Christchurch City Council
ATTACHMENTS UNDER SEPARATE COVER

Date: Wednesday 17 May 2023
Time: 9.30 am
Venue: Council Chambers, Civic Offices,
53 Hereford Street, Christchurch

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Draft plan for consultation

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Have your say

To insert details around Special Consultative Process

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Huihui Mai Engagement – what we heard

The Huihui Mai – let's come together to plan our future engagement was held from 23 February – 26 March 2023 to seek community input and test the work to date to inform the development of the draft Spatial Plan and the Mass Rapid Transit (MRT) Indicative Business Case work.

The engagement included an online survey, public workshops, drop-ins, activations, and a dedicated youth engagement programme which included workshops in schools and a youth summit.

During the engagement over 7,000 people completed the online survey and over 500 people were engaged face-to-face through public and youth workshops, an online webinar, drop-ins across Greater Christchurch, and presentations to groups. Of these, over 1,300 people who completed the online survey and participated in workshops were under the age of 25.

Findings from the engagement include:

- 86% of people agree with the proposed direction of the draft Spatial Plan to focus growth around key urban and town centres and along public transport routes.
- 53% of people agree with the proposed MRT route (24% disagree). Agreement is much higher in suburbs along the MRT route (72%). For those who did not agree, a desire for improved public transport to where they live – Rolleston, Rangiora, Eastern Christchurch (i.e. not on the proposed route) is the main reason for disagreeing with the proposed route.
- 56% of people are open to higher density living, but it needs to be planned and designed to meet their different needs and provide quality of life for people.
- To use their cars less, people want more frequent, more reliable and more direct public transport.

The feedback on what would encourage people to consider higher density living and using their cars less, and what people value and believe is missing in their neighbourhoods provides an important input into the implementation of the Spatial Plan.

Key Themes from the Engagement	How this is considered in the draft Spatial Plan
The vast majority of people agree with the direction to focus growth around urban and town centres and along public transport routes	Consistent with the direction of the draft Spatial Plan
Many people are open to high density living, but it needs to be planned and designed to meet their different needs and provide quality of life for people	As key tools to deliver the Spatial Plan are developed - e.g. Priority Development Areas, Housing Plan,– explicit consideration must be given to how to ensure that the development of high-density housing meets the holistic wellbeing and lifestyle needs of people.
People want effort focused on all aspects of the natural environment, with particular importance placed on improving the health of our waterways.	Inform the development and implementation of a Greater Christchurch blue-green network. This is a key move in the draft Spatial Plan.
Over half of people agree with the suggested 'turn up and go route'. Where they don't agree, it's mainly about wanting enhanced public transport / extension of the route to where they live	The draft Spatial Plan identifies the 'turn up and go route' or Mass Rapid Transit route as a key move in shaping greater Christchurch. The draft Spatial Plan seeks to focus development along these routes and centres. This is also reflected in the identification of the Priority Development Areas (arising from

	technical evaluation) which are focused into key locations along the 'turn up and go route'.
To use their cars less, people want more frequent, more reliable and more direct public transport.	The draft Spatial Plan identifies a number of opportunities and directions for shaping Greater Christchurch urban from to enable people to use their cars less, if they choose too.
Partnership and communication between urban development partners needs to improve to achieve better outcomes.	The draft Spatial Plan joint work programme has actions/initiatives that will require the need to establish better models for partnering / communicating with urban development partners. The draft Spatial Plan acknowledges that coordinated action with infrastructure providers and the development sector will be of particular importance to enabling the type and scale of development needed to achieve the desired pattern of growth
We need to protect Greater Christchurch's role as a national and regional logistics hub.	The draft Spatial Plan as part of the Opportunity statements directions. This will also be an important component of the Greater Christchurch Transport Plan.
There are some barriers and challenges to shift the balance of commercial residential development from greenfield to higher-density housing.	The review of statutory / non-statutory tools to shift the feasibility of development is proposed as an action within the draft Spatial Plan joint work programme.

With the Huihui Mai consultation exploring what Greater Christchurch could look like in 2050, there was a large emphasis on capturing the youth voice. 1,300 youth under 25 took part in our survey, and 386 rangatahi from schools, tertiary institutions, youth councils/rōpū and participation groups participated in tailored workshops.

Key themes identified by youth included:

- There needs to be an affordable and accessible range of housing options for different groups of people, including options for intergenerational living and large whānau/aiga, when planning for future growth.
- First home buyers and flatmates would be very open to high density housing - this would need to be affordable and have good design that maintains privacy, space and energy efficiency and promotes access to green spaces.
- The 'Turn up and go service' could be extended to Kaiapoi and Rolleston, and out East to make the central city and Greater Christchurch areas more accessible. Considerations for transport options are: affordability, accessibility, frequency, consistency, safety for drivers and passengers and Wi-Fi-friendly
- Climate change, a clean and green environment, and the Avon and drinking water quality is a top priority
- Safety across all aspects of living, working, transport and recreation in Greater Christchurch and on online platforms is important
- Māoritanga is embraced, visible and valued. Greater Christchurch is diverse, multi-cultural and welcoming and this is reflected in the city and at the decision making tables.

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Key terms

BLUE-GREEN NETWORK

A blue-green network is a series of spaces and corridors that follow and connect water bodies, parks, green areas and the coast. Blue elements include rivers, streams, storm water drains and basins, wetlands, freshwater, and coastal water; while green elements include trees, parks, forests, reserves and greenways.

CENTRE

A centre is a location that is a focal point for economic, social, community and civic activity. This plan refers to four different types of centres – being significant urban centres, major towns, locally important urban centres and towns, and key business areas – reflecting the expected scale and mix of activities and buildings.

DENSITY

Density refers to the number of houses or dwellings within a certain area. The higher the number of dwellings per hectare, the higher the density. This plan refers to low, medium and high density. Low density generally describes an area with predominately detached dwellings on sections greater than 300m^2. Medium density describes areas where attached dwellings are more prevalent, such as semi-detached or duplex dwellings, terraced housing, or low-rise apartments. In high density areas, multi-story buildings are prevalent.

DEVELOPMENT CAPACITY

Development capacity means the capacity of land to be developed for housing or for business use; based on the zoning, objectives, policies, rules and overlays that apply in the relevant proposed and operative Resource Management Act planning documents, and the provision of adequate development infrastructure to support the development of land for housing or business use.

GREEN BELT

A green belt is a planning tool used to maintain areas of green space around urban areas, often acting as a buffer between urban and rural areas.

KĀINGA NOHOANGA

Kāinga nohoanga is a form of settlement or land development for members of hapū or whānau providing residential accommodation. It may also include accommodation for visitors and short term residents with associated communal buildings and facilities; as well as social activities and facilities, commercial activities, and cultural facilities and activities.

MASS RAPID TRANSIT

Rapid transit is a step up from conventional public transport, being a quicker, more frequent and reliable, higher-capacity public transport service that operates on a permanent route (road or rail) that is largely separated from other traffic. It was also being mentioned as 'turn-up-and-go' service.

MIXED-USE

Mixed-use refers to the variety of activities permitted by planning regulations to occur either within a location (such as within a town centre) or on a site. Mixed-use planning regulations permit a variety of residential, commercial or community activities to occur, rather than restricting activities to a single use, such as residential only.

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MODES OF TRANSPORT AND MODE SHIFT

Transport modes refers to the different ways or types of vehicles people use to get from A to B. In this plan, the different modes of transport referred to include public transport (such as bus services), active transport (such as cycling and walking) and private vehicles (such as cars). Mode shift means growing the share of travel by public transport, cycling and walking.

NGĀ WAI

Ngā Wai encompasses water bodies and their margins, and include ngā awa (rivers), ngā roto (lakes), ngā hāpua (coastal lagoons), ngā repo (wetlands) and ngā puna (springs).

PRIORITY AREAS

Priority Areas are areas that the partnership wishes to focus coordinated effort at a given time. They are a key tool as part of the Urban Growth Agenda framework that provides a mechanism for coordinated and aligned action across multiple agencies; to inform, prioritise and unlock investment, and drive collective accountability.

It is important to note that if an area is not a 'Priority Area' through this process, it does not mean that it may not become one at a later date. The list of Priority Areas can change and be re-prioritised as challenges and opportunities change or evolve. It also does not mean that development, partnership and investment in areas outside of a Priority Area cannot occur.

SOCIAL INFRASTRUCTURE

Social infrastructure includes parks and open spaces, community facilities, schools and health facilities. In this plan, the term infrastructure includes social infrastructure, unless specified otherwise.

TARGETED INTENSIFICATION

Targeted intensification refers to accommodating housing and business growth through greater intensification around key urban and town centres, and along public transport corridors.

URBAN FORM

The urban form is the physical shape and land use patterns of towns and cities. It refers to housing types, street types, how they sit in the environment and their layout. It includes the location, density and design of homes, workplaces, schools, parks and other community facilities, as well as the transport networks that connect them.

WĀHI TAONGA

Wāhi Taonga are treasured places that have high intrinsic value, and are valued for their capacity to shape and sustain the quality of life. Access to these areas is important to Ngāi Tahu identity.

WĀHI TAPU

Wāhi Tapu are sites and places that are culturally and spiritually significant to the history and identity of mana whenua. Wāhi Tapu sites are to be protected according to tikanga and kawa to ensure the sacred nature of those sites is respected.

WELL-FUNCTIONING URBAN ENVIRONMENTS

The National Policy Statement on Urban Development requires planning decisions to contribute to well-functioning urban environments. A definition of well-functioning urban environments is provided in the *Delivering on national direction* section of this plan.

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Introduction

Within the next 60 years, the population of Greater Christchurch is set to double to one million. It's important to plan for how growth this significant will be accommodated, while also looking after the environment and responding to climate change.

In 2022, the Greater Christchurch Partnership and the Crown established an Urban Growth Partnership for Greater Christchurch – the Whakawhanake Kāinga Komiti. This partnership of central government, local government and mana whenua is focused on shared objectives related to affordable housing, emissions reduction, and creating liveable and resilient urban areas.

The first priority of the partnership is the Greater Christchurch Spatial Plan – this document.

The Spatial Plan sets out the partners' shared vision for the future of Greater Christchurch. It is a plan for action, for starting now to make the transformational shifts needed to secure the future of Greater Christchurch. This includes a clear pathway for how the city region will create prosperous and well-functioning urban environments, and build greater resilience in the context of the changing environment. It sets out what the priorities are and what needs to happen to achieve them.

Its key directions include a focus on targeted intensification in centres and along public transport corridors, along with the prosperous development of kāinga nohoanga on Māori Land and within urban areas.

The direction set out in the plan is supported by commitments across central government, local government and mana whenua to partner and invest in shared priorities for Greater Christchurch, to ensure the city region remains a great place to live for all. The implementation of the plan will form the ongoing work programme of the partnership.

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Acknowledging Te Tiriti and Rangatiratanga

The contemporary relationship between Ngāi Tahu whānui and the Crown is defined by three core documents: Te Tiriti o Waitangi, the Ngāi Tahu Deed of Settlement 1997 and the Ngāi Tahu Claims Settlement Act 1998.

Papatipu Rūnanga expect that the partners will honour Te Tiriti o Waitangi and the principles upon which it is founded, including principles of Partnership and recognition of their rangatiratanga status.

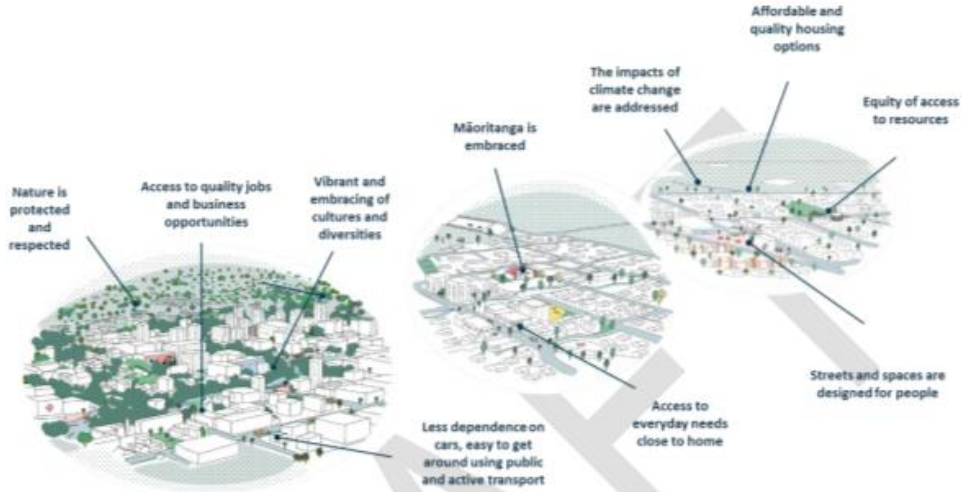
In making its apology in 1998, the Crown acknowledged that Ngāi Tahu holds rangatiratanga within the Ngāi Tahu takiwā. Further, the Te Rūnanga o Ngāi Tahu Declaration of Membership Order 2001 establishes individual Papatipu Rūnanga as the entities with responsibility for resources and the protection of tribal interests within their respective takiwā.

These documents and matters have informed the nature and manner of engagement and collaboration between the Papatipu Rūnanga and the partners involved in the development of this Spatial Plan, and the commitments made to actively support and assist mana whenua fulfil their priorities.

The aspirations for Greater Christchurch – a place to live well

The Spatial Plan seeks to deliver on the community aspirations for Greater Christchurch – as a place that supports the wellbeing of residents both now and for generations still to come.

Figure 1: Community aspirations for Greater Christchurch in 2050



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The Greater Christchurch area

Greater Christchurch is found at the meeting point of the Canterbury Plains, the Pacific Ocean, and the volcanic remnants of Whakaraupō / Lyttelton and Te Pātaka a Rākaihautū / Banks Peninsula.

It extends from Rangiora in the north to Lincoln in the south, and from Rolleston in the west to Sumner in the east. It includes the flat lands and Port Hill areas of Ōtautahi Christchurch, and the surrounding towns and rural areas. Its landscape is dominated by rivers, lakes, estuaries, coastal lagoons, wetlands and springs.

Greater Christchurch includes parts of three territorial authorities: Christchurch City, Selwyn District and Waimakariri District. It is also part of a cultural landscape that holds significant historic and contemporary cultural importance for Ngāi Tahu whānui.

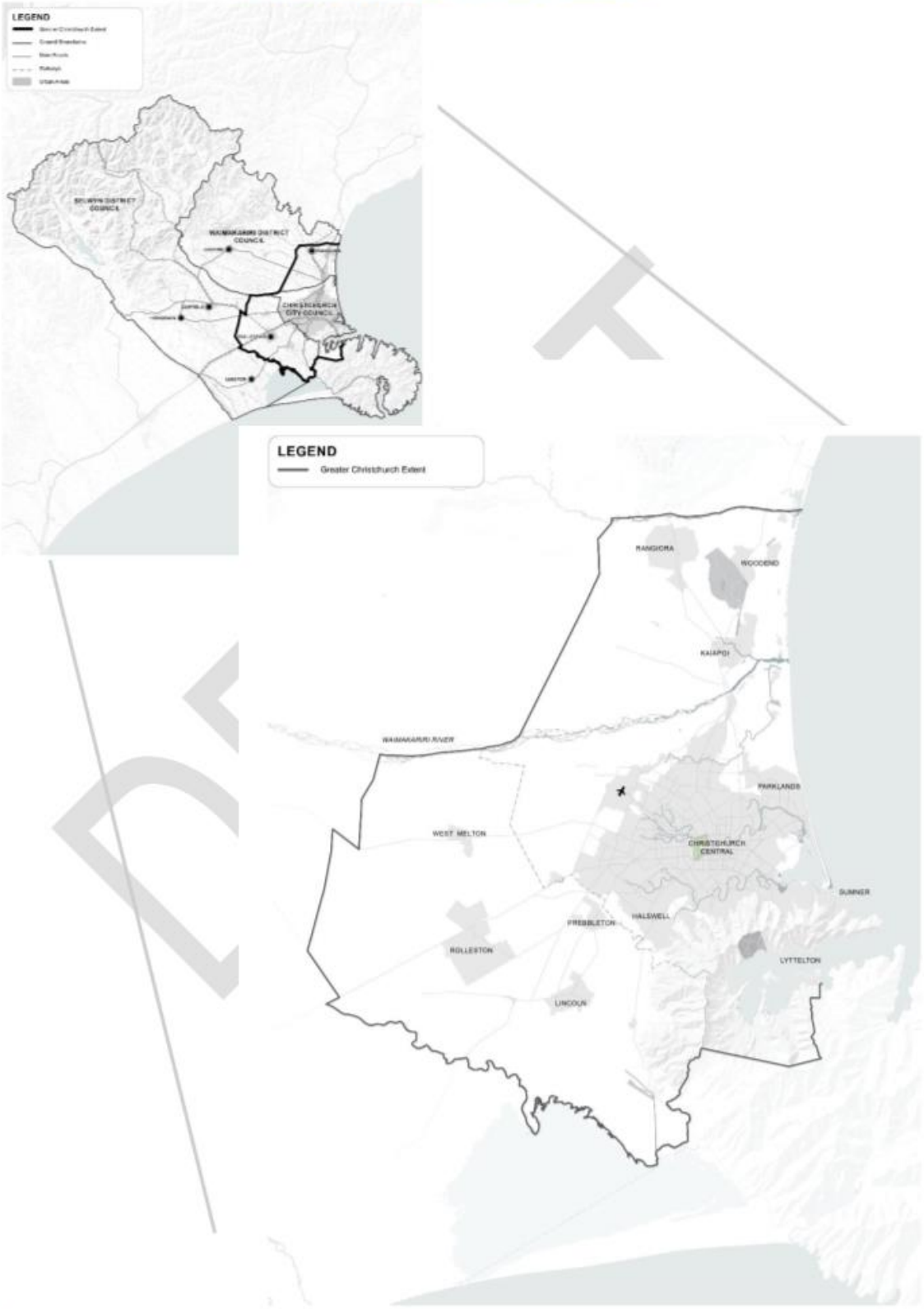
Greater Christchurch traverses the takiwā of three Papatipu Rūnanga: Te Ngāi Tūāhuriri, Taumutu and Te Hapū o Ngāti Wheke (Rāpaki), with the marae of Te Ngāi Tūāhuriri and Te Hapū o Ngāti Wheke being located within the Greater Christchurch area. The marae associated with each of the Papatipu Rūnanga are the beating hearts of tribal identity and centres for cultural, social and economic activities.

Greater Christchurch sits within and has deep connections with the wider Waitaha / Canterbury region.

The geographic extent of Greater Christchurch is shown in *Map 1*.

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Map 1: The geographic area of Greater Christchurch



Context

How Greater Christchurch has grown

The Greater Christchurch area has been inhabited by Māori for settlement, resource gathering and exercising of cultural practices for more than 1,200 years. The earliest peoples in the area were the Waitaha, who were succeeded by Ngāti Mamoe. Ngāti Mamoe were followed soon after by hapū who came to be known as Ngāi Tahu.

The coastline of Te tai o Mahaanui acted as an important route for trade and travel, while the water bodies and forests in the area provided a rich source of mahinga kai.

The abundance of resources in the area attracted European settlers from the 1800s. Christchurch became a centre for provincial government, as well as the market, logistics, services and education hub for the surrounding region. Farming was the city's first industry, reflecting the pre-eminence of the Waitaha / Canterbury region as a farming province.

The way that Christchurch and the towns in Selwyn and Waimakariri have grown over time has been enabled by the availability of flat land on the Canterbury Plains that is relatively easy to subdivide and service. The introduction of the private car during the middle of the 20th century also enabled the urban area to develop beyond the inner city and along tram lines, to the suburbs and surrounding towns. The reliance on the car for travel has since become ingrained in the fabric of Greater Christchurch.

In 2010 and 2011, a series of earthquakes caused widespread damage to Greater Christchurch. It resulted in the permanent displacement of whole neighbourhoods in the eastern areas of Christchurch and in Kaiapoi, and demolition of many buildings in Christchurch's Central City. This led to a substantial shift of households and businesses to the western areas of Christchurch and towns in Selwyn and Waimakariri.

The private and public sectors have made considerable investments since. The Central City in particular has benefitted from modern infrastructure, new civic assets, urban realm improvements, and large residential and commercial developments. The rebuild of the Central City has been the most ambitious urban renewal project in Aotearoa New Zealand's history and is once again a place that is attractive to people and businesses.

Greater Christchurch's population exceeds half a million people, which represents more than 80 percent of the Waitaha / Canterbury population and almost half of the Te Waipounamu / South Island population. Strong population growth in Greater Christchurch over recent years reflects its highly valued lifestyle, including the easy access to green spaces and the outdoors, the sense of community, the relative affordability of living, and the growing vibrancy. It's also benefitted from immigration, which has created a rich and diverse population.

Greater Christchurch has developed into the primary economic hub and commercial centre for the Waitaha / Canterbury region and Te Waipounamu / South Island, supporting a number of nationally important economic assets. This includes a large business sector, four tertiary institutions, a number of research institutions, an international airport, a sea port and two inland ports.

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Planning and policy context

Building on previous growth strategies

The first strategic growth strategy developed for Greater Christchurch was the Greater Christchurch Urban Development Strategy in 2007 (which was updated in 2016). The collaborative work of the Greater Christchurch Partnership since has been guided by this strategy, including the planning undertaken to accommodate the large number of households and businesses displaced after the earthquakes in 2010 and 2011.

Figure 2: Timeline of key documents for Greater Christchurch



This Spatial Plan builds on and replaces the previous plans and strategies developed for Greater Christchurch, but does not seek a fundamental change from their strategic direction.

It provides an up-to-date look at how Greater Christchurch has evolved over recent years, and the strategic opportunities and challenges for taking the city region forward.

It recognises that Greater Christchurch has seen growth through the expansion of urban areas happen faster than anticipated and growth through intensification of urban areas not achieve anticipated levels. This was a by-product of the earthquakes and an acknowledged divergence from the planned growth direction.

Figure 3: Intended versus actual pattern of growth



Delivering on national direction

The Spatial Plan has been prepared under the Urban Growth Agenda – a central government programme to improve coordination between central government, local government and mana whenua in high growth urban areas.

The Spatial Plan is the first priority of the Urban Growth Partnership for Greater Christchurch – the Whakawhanake Kāinga Komiti. The Komiti's priorities strongly align with the objectives of the Urban Growth Agenda and wider national direction, and reflects the issues facing Greater Christchurch.

Figure 4: Components of the Urban Growth Partnerships programme



Whakawhanake Kāinga Komiti's priorities

Create a well-functioning and sustainable urban environment. Priority will be given to:

- Decarbonising the transport system
- Increasing resilience to natural hazards and the effects of climate change
- Accelerating the provision of quality, affordable housing
- Improving access to employment, education and services.

Relevant national direction includes the National Policy Statement on Urban Development, Government Policy Statement on Housing and Urban Development, Government Policy Statement on Land Transport, the Emissions Reduction Plan, and other national policy statements relating to highly productive land and freshwater management.

The Spatial Plan satisfies the requirements of a future development strategy under the National Policy Statement on Urban Development. This includes setting out how well-functioning urban environments will be achieved, and how sufficient housing and business development capacity will be provided to meet expected demand over the next 30 years.

What this national direction requires of the Spatial Plan is summarised below.

Well-functioning urban environments

Contribute to well-functioning urban environments, which at a minimum:

- Have or enable a variety of homes that meet the needs, in terms of type, price and location, of different households; and
- Have or enable a variety of homes that enable Māori to express their cultural traditions and norms; and
- Have or enable a variety of sites that are suitable for different business sectors in terms of location and site size; and
- Have good accessibility for all people between housing, jobs, community services, natural spaces and open spaces, including by way of public or active transport; and
- Support, and limit as much as possible adverse impacts on, the competitive operation of land and development markets; and
- Support reductions in greenhouse gas emissions; and
- Are resilient to the likely current and future effects of climate change.

A low emissions future

Plan for an urban form and transport system that substantially reduces greenhouse gas emissions, including supporting a transformational shift in transport choices.

A healthy natural environment

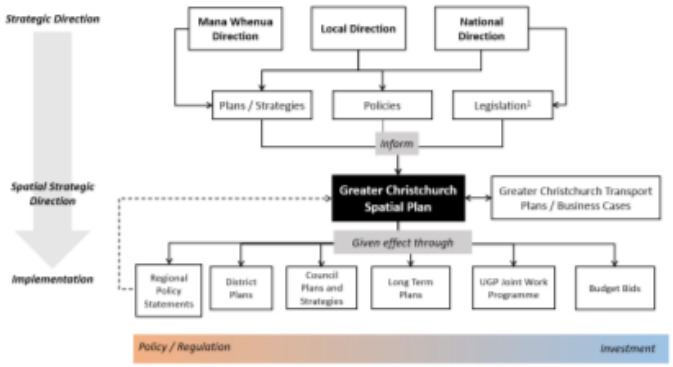
Protect highly productive land for food and fibre production, manage water bodies in a way that gives effect to Te Mana o te Wai, and conserve the natural environment for the benefit of future generations.

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Aligning with local and regional planning processes

The Greater Christchurch councils are also progressing their own local and regional planning processes. Many of these have informed the Spatial Plan and some will help implement the direction of the plan.

Figure 5: Planning context for the Spatial Plan



Related planning processes currently underway:

- Councils are implementing the Medium Density Residential Standards from the Resource Management (Enabling Housing Supply and Other Matters) Amendment Act. Christchurch City Council notified changes to its District Plan in March 2023. Selwyn and Waimakariri District Councils have incorporated changes into their district plan reviews as variations, with decisions expected mid-2023 for Selwyn and the last quarter of 2024 for Waimakariri.
- Selwyn and Waimakariri District Councils are reviewing their district plans. For Selwyn, hearings are underway with decisions expected mid-2023. For Waimakariri, hearings will run from May 2023 to May 2024 with decisions expected late-2024.
- Canterbury Regional Council is reviewing the Canterbury Regional Policy Statement, which includes a review of the airport noise contours and developing significance criteria for new greenfield areas; as well as the Regional Coastal Environment Plan and the Land and Water Regional Plan. This review will also continue to consider, and direct, how to manage urban growth in balance with activities that occur in the rural environment.

Mahaanui Iwi Management Plan

The Mahaanui Iwi Management Plan is an expression of kaitiakitanga and rangatiratanga from the six Papatipu Rūnanga with mana whenua rights over the lands and waters within the takiwā from the Hurunui River to the Hakatere River, and inland to Kā Tirititi o Te Moana – an area that encompasses Greater Christchurch. It is first and foremost a planning document intended to assist Papatipu Rūnanga participate in all aspects of natural and environmental management. It provides a comprehensive suite of objectives and policies that identify values, priorities and processes that should be followed in the restoration and protection of the natural environment, as well as the planning and development of urban areas. It has been a key background document to inform the development of the Spatial Plan.

Looking to the future

Greater Christchurch is well placed for much greater population and economic growth.

The latest projections from Stats NZ indicate Greater Christchurch's population will grow from a population of approximately 530,000 to more than 700,000 by 2051. This is around 170,000 more people and 77,000 more households.

If Greater Christchurch was to grow at the rate seen over the last 15 years, then it could reach a population of 700,000 within the next 25- 30 years and one million within the next 60 years – doubling the size of today's population.

This growing population will become more ethnically diverse, with people identifying as Māori, Pacifica and Asian forming a larger share of the young people and working-age population. As the population ages and becomes more diverse, it's critical that a range of housing types and models of community living are provided so people can stay in their communities through different stages of their lives, and live with their whānau and friends.

Recent investments in infrastructure, buildings, assets and communities provides the opportunity to attract more people, business and investment to the city region. This is critical to the future of Christchurch's Central City, which remains economically vulnerable. About 40,000 people now work in the Central City, which is below pre-earthquake levels and is particularly low compared with the 115,000 people working in the central business districts of Auckland and Wellington.

Moving to a net zero emissions future, along with building the capacity of communities and ecosystems to adapt to the impacts of climate change, will be major challenges over the coming decades.

Mana whenua priorities and expectations

The Spatial Plan needs to reflect the values of mana whenua and give effect to their priorities and expectations. In summary, these expectations are that the Spatial Plan:

- Supports kāinga nohoanga on Māori Land, supported by infrastructure and improved accessibility
- Supports kāinga nohoanga within urban areas
- Protects Wāhi Tapu, Wāhi Taonga and Ngā Wai.

For mana whenua's priorities regarding the environment, refer to *Opportunity 3: Protect, restore and enhance the natural environment, with particular focus on te ao Māori, the enhancement of biodiversity, the connectivity between natural areas and accessibility for people*.

The spatial strategy

Greater Christchurch has grown and changed throughout its history, and will continue to do so into the future. It is essential that the city region develops in a way that provides the best economic, social, cultural and environmental outcomes for its people and places, both for present generations and those still to come.

Six opportunities have been identified for how the Spatial Plan can help close the gap between the current and desired future states for Greater Christchurch, together with a number of directions that will guide the work of the partnership and individual partners to address these opportunities. Two overarching directions particularly shape the desired pattern of growth.

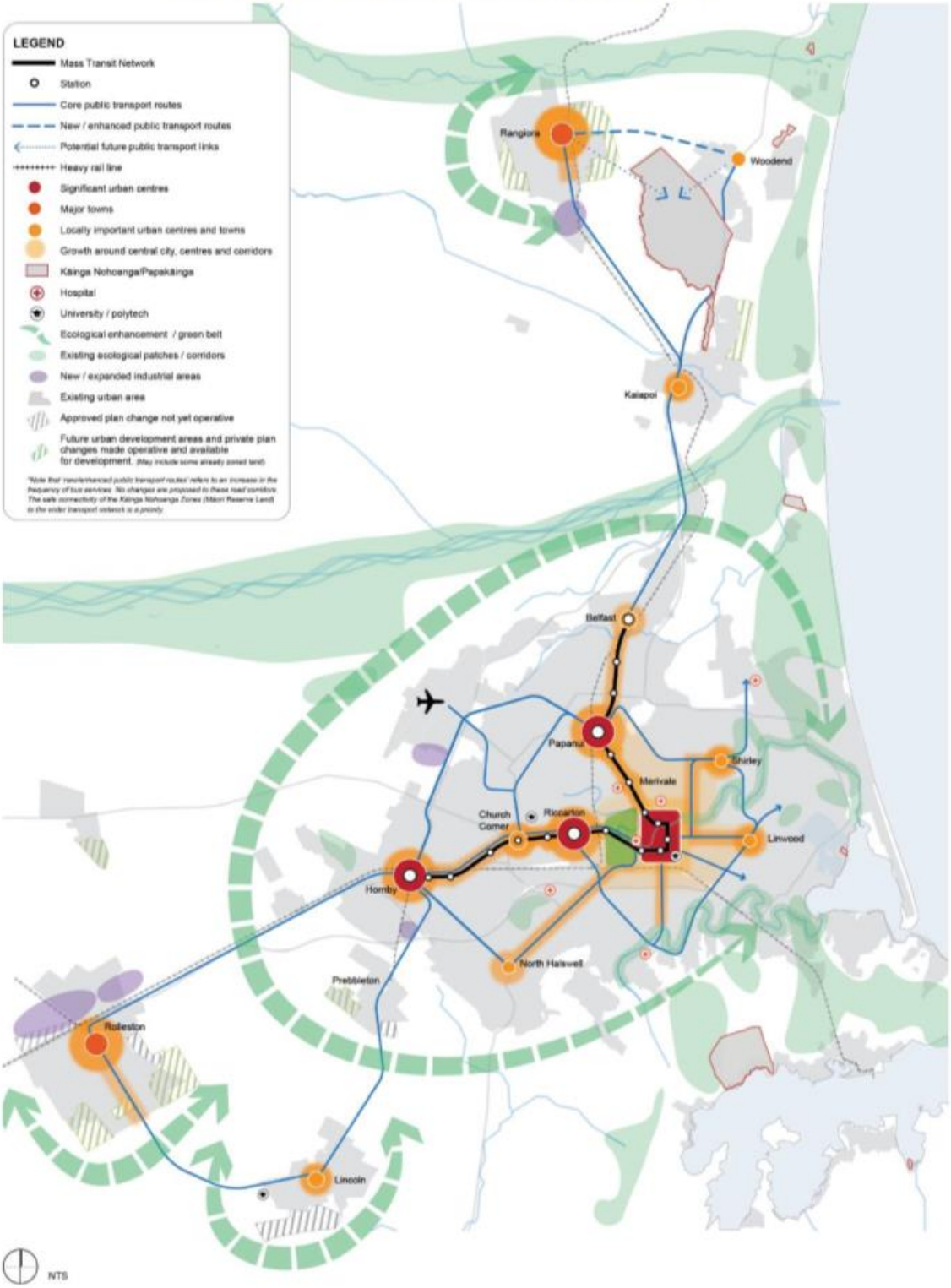
Five key moves have also been identified that will be fundamental to realising the transformational shifts required to achieve the desired future and support inter-generational wellbeing.

Together, these opportunities, directions and key moves make up the spatial strategy for Greater Christchurch. A visual representation of the strategy is provided in *Map 2*.

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Opportunities	**#1** Protect, restore and enhance historic heritage and sites and areas of significance to Māori, and provide for people's physical and spiritual connection to these places	**#2** Reduce and manage risks so that people and communities are resilient to the impact of natural hazards and climate change	**#3** Protect, restore and enhance the natural environment, with particular focus on te ao Māori, the enhancement of biodiversity, the connectivity between natural areas and accessibility for people	**#4** Enable diverse and affordable housing in locations that support thriving neighbourhoods that provide for people's day-to-day needs	**#5** Provide space for businesses and the economy to prosper in a low carbon future	**#6** Prioritise sustainable transport choices to move people and goods in a way that significantly reduces greenhouse gas emissions and enables access to social, cultural and economic opportunities
Directions	**Focus growth through targeted intensification in urban and town centres and along public transport corridors** **Enable the prosperous development of kāinga nohoanga on Māori Land and within urban areas**					
	1.1 Avoid urban development over Wāhi Tapu 1.2 Protect, restore and enhance Wāhi Taonga and Ngā Wai	2.1 Focus and incentivise growth in areas free from significant risks from natural hazards 2.2 Strengthen the resilience of communities and ecosystems to climate change and natural hazards	3.1 Avoid development in areas with significant natural values 3.2 Prioritise the health and wellbeing of water bodies 3.3 Enhance and expand the network of green spaces 3.4 Protect highly productive land for food production 3.5 Explore the opportunity of a green belt around urban areas	4.1 Enable the prosperous development of kāinga nohoanga on Māori Reserve Land, supported by infrastructure and improved accessibility to transport networks and services; along with the development of kāinga nohoanga within urban areas 4.2 Ensure sufficient development capacity is provided or planned for to meet demand 4.3 Focus, and incentivise, intensification of housing to areas that support the desired pattern of growth 4.4 Provide housing choice and affordability 4.5 Deliver thriving neighbourhoods with quality developments and supporting community infrastructure	5.1 Sufficient land is provided for commercial and industrial uses well integrated with transport links and the centres network 5.2 A well connected centres network that strengthens Greater Christchurch's economic competitiveness and performance, leverages economic assets, and provides people with easy access to employment and services 5.3 Provision of strategic infrastructure that is resilient, efficient and meets the needs of a modern society and economy	6.1 Enable safe, attractive and connected opportunities for walking, cycling and other micro mobility 6.2 Significantly improve public transport connections between key centres 6.3 Improve accessibility to Māori Reserve Land to support kāinga nohoanga 6.4 Develop innovative measures to encourage people to change their travel behaviours 6.5 Maintain and protect connected freight network
Key moves	**The prosperous development of kāinga nohoanga**	**A strengthened network of urban and town centres**	**A mass rapid transit system**	**A collective focus on unlocking the potential of Priority Areas**	**An enhanced and expanded blue-green network**	

Map 2: The Greater Christchurch spatial strategy (1 million people)



Overarching directions

Focus growth through targeted intensification in urban and town centres and along public transport corridors

The desired pattern of growth in Greater Christchurch that best delivers on the six opportunities is to focus household and business growth through greater intensification in urban and town centres, and along public transport corridors. Concentrating growth in this way has many benefits:

- Reduces urban expansion over Wāhi Tapu and Wāhi Taonga.
- Provides opportunities to restore and enhance the natural environment.
- Has the least impact on highly productive soils and most likely to deliver positive outcomes for air quality and water use.
- Is more likely to achieve policy directives for integrated planning (land and water).
- Provides a better opportunity to mitigate risks associated with natural hazards.
- Provides the best opportunity to achieve higher density housing consistent with trends showing an increased demand for smaller homes.
- Provides the best accessibility and would support lower vehicle kilometres travelled and greenhouse gas emissions from transport.
- Provides the best opportunities for economic agglomeration and achieves more efficient and effective use of land and resources.
- Provides economies of scale to fund delivery.

Enable the prosperous development of kāinga nohoanga on Māori Land and within urban areas

The prosperous development of kāinga nohoanga is fundamental to the future of Greater Christchurch. The Spatial Plan sets out the commitment of partners to deliver on mana whenua's priorities and expectations in regard to kāinga nohoanga. This includes enabling the development of kāinga nohoanga on Māori Land, supported by infrastructure and improved accessibility to transport networks and services; along with the development of kāinga nohoanga within urban areas to enable mana whenua to provide for their customs and wellbeing. Prosperous kāinga nohoanga is essential to achieving well-functioning urban environments.

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Key moves

The prosperous development of kāinga nohoanga

On Māori Reserve Land

In 1848, the Crown acquired some 20 million acres of land from Ngāi Tahu through the Canterbury Deed of Purchase. The terms agreed as part of the land purchase included the setting aside of kāinga nohoanga (translated as places of residence) as self-governing reserves.

With each reserve came the rights to mahinga kai; to develop land (including subdivision) and community facilities; to develop a sustainable and growing economic base to sustain future generations; and an enduring timeframe – meaning that the reserves would belong to the people and their descendants without impediment for all of the future.

Within Greater Christchurch, Māori Reserve Land is located at:

- MR875, Rāpaki (zoned Papakāinga/Kāinga Nohoanga)
- Tuahiwi MR873 (proposed to be zoned Special Purpose Kāinga Nohoanga)
- Kaiapoi Pā (proposed to be zoned Special Purpose Kāinga Nohoanga)
- Pūharakekehenui MR892 (zoned Rural)
- MR959 east side of Te Waihora (zoned Rural)

The Crown's agreement to the development and governance of the reserves has never been fulfilled.

Multiple statutes have removed these rights, including successive planning statutes from the Town and Country Planning Act 1953 to the Resource Management Act 1991. Through this legislation, Māori Reserves have been zoned as Rural – preventing subdivision, housing, social and educational infrastructure, and the development of prosperous economic activities. This has impacted the prosperity and wellbeing of mana whenua.

Since 2015, there have been changes made to the Christchurch District Plan and the Proposed Waimakariri and Selwyn District Plans to remove zoning impediments to the development of Māori Reserves. While these changes have gone some way to providing for development of Māori Land, further changes are needed to remove residual impediments.

Further, strategic planning has failed to recognise kāinga nohoanga as it does not fit the western paradigm of residential, commercial, industrial and rural activities. Accordingly, Māori Land has never been identified as a future or priority development area towards which investment should be directed.

The changes that have been made to district plans have not, in all cases, been supported with investment for infrastructure. This largely reflects that councils are geared towards the development of staged residential subdivisions, leaving tikanga and the inter-generational development of Māori Land and kāinga nohoanga to fall outside operational processes, and to later and unknown commitments and delivery.

In particular, infrastructure has become a significant barrier to the development of Māori Land within MR873 at Tuahiwi. It is also noted that MR892 and MR959 should be rezoned for Kāinga Nohoanga purposes.

Partnership and work between mana whenua and councils is needed to remove residual planning barriers to the development of Māori Land in the Papakāinga / Kāinga Nohoanga Zone in the Christchurch District Plan and the proposed Special Purpose (Kāinga Nohoanga) Zone in Waimakariri. Infrastructure is also required to

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service Māori Land within the full extents of the original Māori Reserves, with a specific focus on MR873 at Tuahiwi. This investment includes improved accessibility via public and active modes of transport.

Within urban areas

Many Māori live within Greater Christchurch's urban area where housing is typically provided through general residential, medium and high density zoning – none of which contemplate or appropriately provide for kāinga nohoanga as a housing outcome. Consequently, the cultural needs of Māori have been overlooked.

The National Policy Statement on Urban Development requires that a well-functioning urban environment has, or enables, a variety of homes, and that this includes homes that enable Māori to express their cultural traditions and norms. Similarly, the Resource Management (Enabling Housing Supply and Other Matters) Amendment Act allows amendments to district plans to enable papakāinga. This is not limited to specific geographic areas, such as Māori Reserves, or any particular urban zoning. This necessitates dispensing with those policies that previously limited cultural housing initiatives to Māori Reserves.

Partnership and work between mana whenua and councils is also needed to create a planning framework that will enable kāinga nohoanga within the urban areas of Greater Christchurch.

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A strengthened network of urban and town centres

There is a network of urban and town centres across Greater Christchurch. They vary by the populations they serve, the range of activities and services they provide, and their level of accessibility by public transport.

Defining the role and function of these centres helps to plan their ongoing development as focal points for their communities, and in some cases, as the focus for significant growth in the future.

Centre	Purpose	Locations
Significant urban centres	Focusing employment and service functions in a small number of integrated, significant employment centres and major towns to improve the productivity and growth of economic activity, attract additional business investment, support a vibrant and viable Central City, and better leverage and integrate economic assets.	• Central City (primary centre) • Riccarton corridor • Hornby • Papanui / Merivale corridor • Papanui
Major towns		• Rolleston • Rangiora
Locally important urban centres and towns	Supporting greater intensification of people, services and employment to provide better co-location of people with amenities and employment, and provide better connections through public and active modes of transport.	• Shirley • Linwood • North Halswell • Belfast / Northwood • Lincoln • Kaiapoi • Ravenswood / Pegasus / Woodend • Key towns outside Greater Christchurch (including Darfield, Leeston, Oxford) • Corridors around other high-frequency public transport routes
Key business areas	Providing space for industrial activity and employment primarily; with freight accessibility, as well as accessibility for workers via public and active modes of transport, being important.	• Christchurch Airport / Russley • South of the Central City • Southern industrial spine (including iZone) • Port of Lyttelton • Other business areas

The significant urban centres in Christchurch, and the major towns in Selwyn and Waimakariri, will have an important role to play in accommodating higher levels of growth in the future.

Central City	The Central City will remain the primary centre for Greater Christchurch.
	
	The Central City is currently underperforming economically, which undermines its vibrancy and long term viability; limits economic concentration; and reduces the attractiveness of Greater Christchurch to business, tourism and talent. The opportunity is to strengthen the form and function of the Central City by:
	
	• Maintaining and supporting its primacy as the main leisure, tourism, economic and transport hub of Greater Christchurch
	
	• Incentivising, enabling and supporting it as a focal point for:
	  ○ Business attraction, with significant increases in employment density, high-rise commercial developments, flagship retail, head offices and knowledge intensive services
	  ○ Redevelopment for the highest residential densities (ranging from 100 to 200 households per hectare), including multi-storey townhouses, apartments and mixed-use developments
	
	• Transitioning the south and south-east general business and industrial areas to comprehensive higher density residential and mixed-use developments.

Riccarton corridor Hagley Park to Upper Riccarton	The opportunity is to develop the currently retail orientated areas of the Riccarton corridor for commercial development and business investment. There is the opportunity to extend knowledge-intensive services, high value jobs and innovative activity from the Central City, linking with the University of Canterbury, along the corridor; supported by high frequency public transport, and over time, mass rapid transit. There is also the opportunity to incentivise and provide for multi-storey townhouses and apartments, achieving average density yields ranging between 70 and 150 households per hectare.
Papanui / Merivale corridor Central City to Papanui	The opportunity is to build on the existing strong retail, hospital / health sector and tourism accommodation provision to provide an intensified corridor connecting through Merivale to the Central City; noting that the Papanui / Merivale corridor is primarily focused on residential (50 to 100 households per hectare), with limited commercial. There is the opportunity to leverage this potential mass rapid transit route.
Papanui	The opportunity is to build on this existing retail and service centre for north Christchurch to provide higher density residential (70 to 100 households per hectare), and address poor quality urban form through regeneration and significant brownfield redevelopment opportunities. The opportunity is to provide a stronger, higher quality northern service centre in Papanui, with high density housing linked by high frequency public transport.
Hornby	The opportunity is to transition the current poor quality urban form of Hornby, which has a wide mix of business and industrial activities, low density and poor quality residential, and low tree cover, into the second sub-regional service centre after the Central City.

	Hornby is strategically positioned in relation to Christchurch Airport and the western areas of Greater Christchurch. There is the opportunity for regeneration and significant brownfield redevelopment to enhance its urban form, support community integration, and provide a stronger and more integrated centre core with the transition of surrounding areas from industrial to high density residential (50 to 100 households per hectare).
Rangiora	Rangiora is a key service and employment centre for surrounding areas; providing a mature and comprehensive offering of employment, retail and community facilities. Its residential stock is lower density. The opportunity is to intensify (residential and commercial) around Rangiora's town centre, while retaining its character.
Rolleston	Rolleston is a strong residential growth node with high quality community infrastructure and a developing town centre providing retail and hospitality. The township is located beside iZone (an inland port and logistics hub). However, employment (commercial and industrial) is still low relative to the size of the population, with most people commuting to Christchurch for employment. In the short term, the opportunity is to build Rolleston's commercial centre, with higher density residential commensurate with its population.

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A mass rapid transit system

A strengthened urban and town centres network in Greater Christchurch will need to have strong connections between centres. This will require more realistic and viable alternatives to private car use.

Mass rapid transit will not only be a transport enhancement to Greater Christchurch's infrastructure, but also a 'city shaping' initiative that is fundamental to the shift in urban form required to help achieve a net zero emissions future.

What is mass rapid transit?

Mass rapid transit is a high frequency and capacity public transport service that runs on a dedicated transport corridor, using modern high quality vehicles. These corridors prioritise public transport, as well as people on foot and bike. Mass rapid transit would be a core component of the public transport network, supported by bus services. It would be a step up from current public transport services in Greater Christchurch.

Key to the success of mass rapid transit in Greater Christchurch:

- **Reliability:** Mass rapid transit vehicles are separated from cars and given priority at intersections, which allows for public transport to be consistently on-time.
- **Speed:** Mass rapid transit travel times are similar if not faster than travelling by car.
- **Frequency:** By operating more regularly, mass rapid transit reduces wait times – 5 minutes or less on average.
- **Capacity:** Mass rapid transit vehicles are high capacity and able to move lots of people.

It is also being mentioned as 'turn-up-and-go' public transport services.

The preferred route

The preferred route for mass rapid transit connects Christchurch's Central City with the key centres of Riccarton, Papanui, Hornby and Belfast (*see Map 3*). The route runs along Papanui Road and Main North Road to the north; Riccarton Road and Main South Road to the west; and along Tuam Street, Manchester Street and Victoria Street in the Central City.

The route provides several benefits:

- A significant proportion of Greater Christchurch's growth over the next 30 years will be focused along these corridors, so development is happening in the right locations.
- It encourages investment in higher density developments and mixed-use areas.
- It provides improved accessibility to key employment areas.

Connections between the districts and the Central City will be provided using direct bus services, including:

- Better intra-district public transport connections
- Direct bus services from the districts to the Central City, principally using the motorway corridors
- Direct connections to the mass rapid transit system
- 'Enhanced' park-and-rides.

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Phasing

The preferred route would likely be constructed in two phases to align with population growth and demand.

Phase one would focus on Christchurch's inner core between Church Corner and Papanui to support intensification around highly accessible centres.

Phase two would extend the route to interchanges in Belfast and Hornby.

Map 3: Preferred mass rapid transit route – Phase 1 and 2

Phase 1



Phase 2



Modes

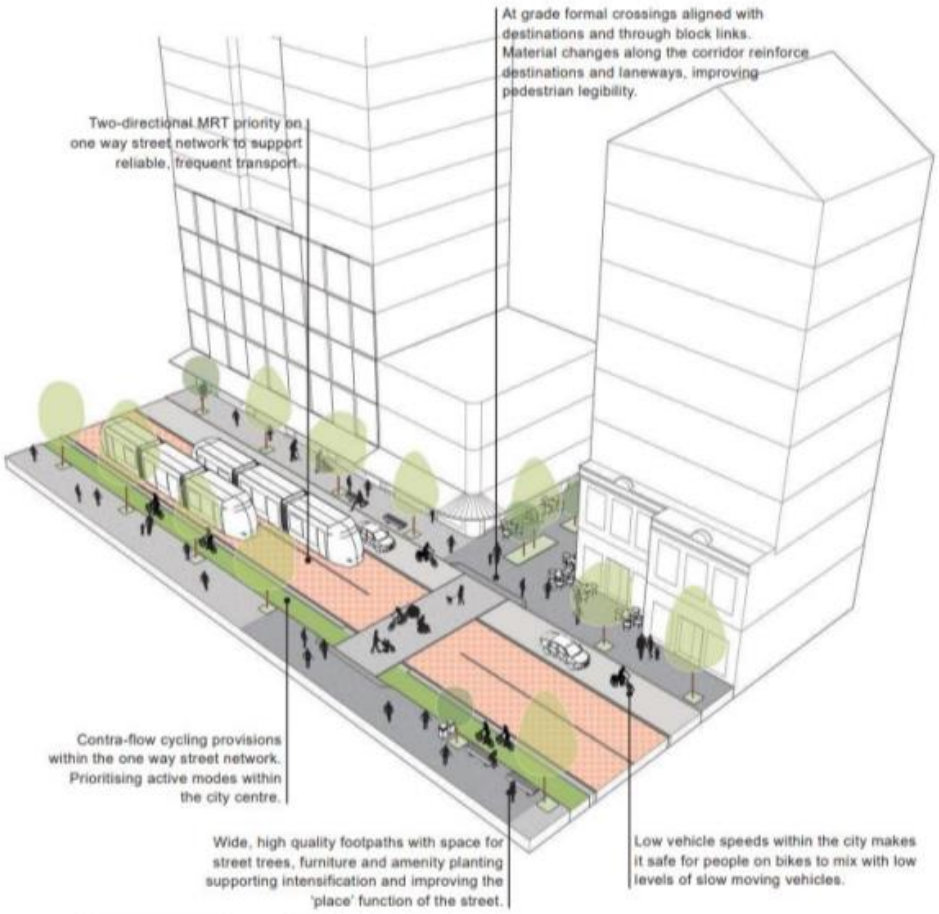
The preferred mass rapid transit route considers either a Light Rail service or a Metro bus service, as both modes have their own package of benefits and constraints. Further investigations will be undertaken in due course with respect to its adaptation to future growth, on its construction, operations and maintenance.

Urban Design of the route and centres

The introduction of mass rapid transit would require some changes to the neighbourhoods located along the preferred route to maximise the benefits of mass rapid transit. These changes would activate streets around stations and better connect people to where they want to go. This includes prioritising walking and other modes of active transport, and improving their look and feel so they are attractive and safe.

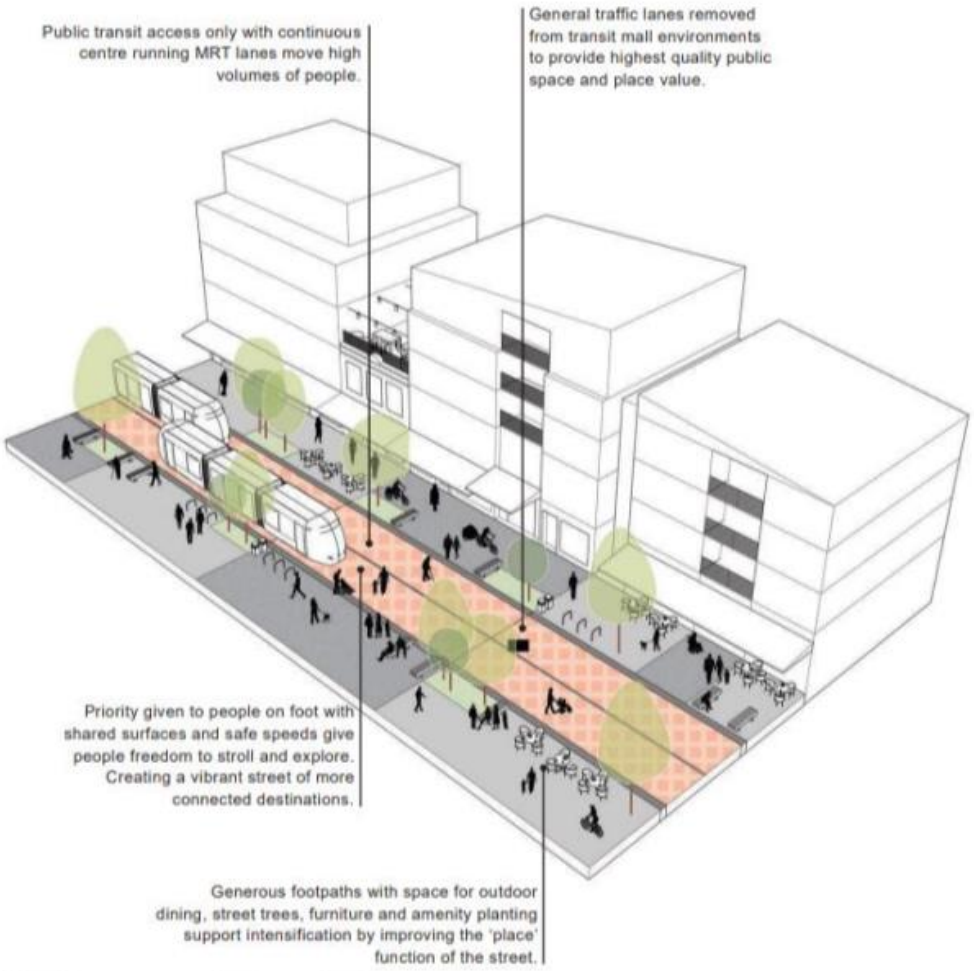
Wider streets along parts of the route would provide opportunities for green spaces, dedicated lanes for active travel and more generous footpaths.

Figure 6: Mass rapid transit neighbourhood urban realm concept



In other cases, the narrower road corridor makes it challenging to provide dedicated space for all users. Mass rapid transit would take up a large share of the road width, limiting the remaining space for other modes of transport. De-prioritising through-traffic within the corridor may be required in some instances, along with the introduction of transit malls, purchasing of land, compromising on the dedicated priority of mass rapid transit and grade separation of mass rapid transit from other vehicles.

Figure 7: Mass rapid transit mall urban realm concept



The success of a mass rapid transit system relies on a substantial shift in the urban form and in the way people travel, to be supported by a wide range of transport interventions as described in *Opportunity 6: Prioritise sustainable transport choices to move people and goods in a way that significantly reduces greenhouse gas emissions and enables access to social, cultural and economic opportunities*.

A collective focus on unlocking the potential of Priority Areas

What are Priority Areas?

Priority Areas are a key tool from the Urban Growth Agenda. They provide a mechanism for coordinated and focused action across multiple agencies to inform, prioritise and unlock public and private sector investment.

Typically, a Priority Area:

- Offers the opportunity for accelerated and/or significant development
- Is complex, in that achieving successful development at the required pace and scale requires a partnership approach
- Are in key locations where successful development gives effect to a spatial plan.

Priority Areas arising from Te Tiriti Partnership

The Priority Areas for Greater Christchurch include areas arising from Te Tiriti Partnership. This recognises that supporting the prosperous development of kāinga nohoanga on Māori Reserves and within urban areas is a priority to be progressed on the basis of Te Tiriti o Waitangi relationships, and as part of partners giving effect to mana whenua's priorities and expectations.

Mana whenua have provided clear expectations for kāinga nohoanga within the original extents of Māori Reserves and within the urban areas of Greater Christchurch. Further work is required in partnership with mana whenua to identify how this priority can be advanced. The advice received to date is that:

- Development of Māori Land for housing, employment and community facilities is to be determined by mana whenua, and enabled and supported by investments in infrastructure by partners in agreement with mana whenua
- The Kāinga Nohoanga Strategy will provide the guidance for implementation of kāinga nohoanga on Māori Land
- Development of housing, employment and community facilities through kāinga nohoanga within urban areas is also a priority for mana whenua
- The Kāinga Nohoanga Strategy will provide direction to partners on how to support and enable kāinga nohoanga within urban areas.

The benefit of including kāinga nohoanga on Māori Reserves and within urban areas alongside other Priority Areas for Greater Christchurch is that they will be recognised as a joint Crown, local government and mana whenua Priority Area within the context of the Urban Growth Partnership framework.

Priority Areas arising from technical evaluation

The Priority Areas identified through technical evaluation include areas that offer significant opportunities for change in Greater Christchurch. This includes accelerated urban development at the right scale; environmental change to enhance resilience; or exemplar projects that will reduce harm, encourage behaviour change or be a catalyst for private investment.

Priority Development Areas provide the opportunity to accelerate development in locations that will support the desired pattern of growth. Eastern Christchurch has also been identified as a Priority Area, rather than a Priority Development Area, to recognise the need for a partnership approach to support this area to adapt to the impacts of climate change and to strengthen resilience.

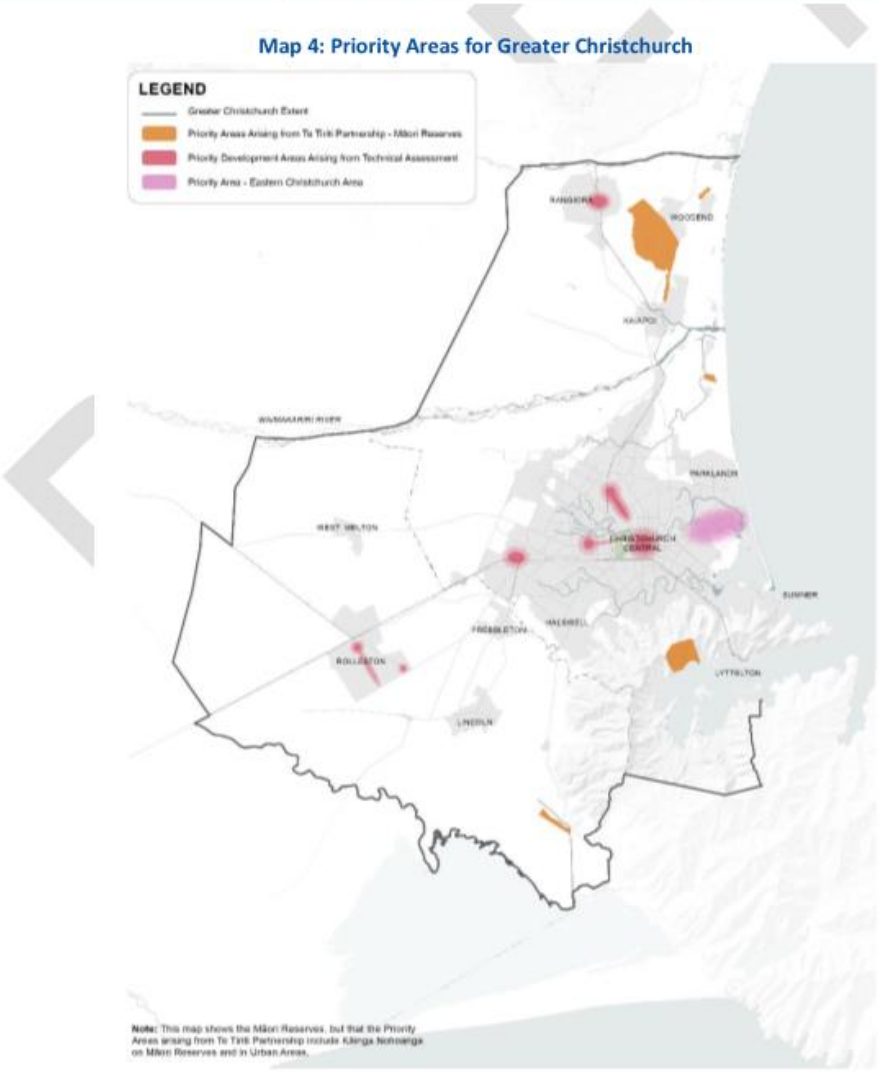
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The broad locations of Greater Christchurch's Priority Areas is shown in *Map 4*. Further work is required to define the extent and description of some of these areas.

Table 1: Priority Areas for Greater Christchurch

Priority Areas arising from Te Tiriti Partnership	Priority Areas arising from technical evaluation		
	Priority Development Areas		Priority Area
Kāinga nohoanga on Māori Reserves and within urban areas	Rangiora Town Centre and surrounds		Eastern Christchurch area
	Mass rapid transit phase one corridor	Papanui	
		Central City	
		Riccarton	
	Hornby		
	Rolleston Town Centre and surrounds		

Map 4: Priority Areas for Greater Christchurch



An enhanced and expanded blue-green network

What is a blue-green network?

A blue-green network provides an integrated, whole-of-system approach to the natural environment, the built environment and the interactions of people with these environments. It is a series of spaces and corridors that follow and connect water bodies, parks, green areas and the coast.

The blue elements of the network include rivers, streams, storm water drains and basins, wetlands, freshwater, and coastal water; while the green elements include trees, parks, forests, reserves and greenways.

Principles

The vision to create an enhanced and expanded blue-green network in Greater Christchurch will be guided by five principles:

- **Integration:** Combining green infrastructure with urban development and transport networks.
- **Connectivity:** Using a combination of green infrastructure, ecological restoration and urban design to connect people and communities with nature, and create linkages for flora and fauna.
- **Multi-functionality:** Delivering multiple ecosystem services simultaneously – restoring and enriching habitats for indigenous biodiversity, strengthening resilience to climate change, improving air quality, and increasing community access to recreational opportunities.
- **Regenerative:** Applying a holistic, whole-of-system approach that utilises development as an opportunity to replenish and restore natural processes, respond to climate change, and build community health and resilience.
- **Identity:** Recognising the unique identity of different areas and enhancing local features to create a sense of place.

Integration of principles

The blue-green network principles provide a framework to guide the further work required to achieve the objectives of regenerating the natural environment and strengthening climate resilience.

These principles will be embedded into the work of the partnership and individual partners through:

- The planning and design of the Priority Areas in Greater Christchurch
- The review of councils' planning documents and strategies
- Identifying the best mix of legislative, regulatory, financial and market-based incentives to complement the application of planning provisions
- Supporting the development of local area plans, urban greening strategies and forest plans, new guidelines and regulations that support urban greening and increased tree canopy cover, and exemplar or demonstration projects.

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Greater Christchurch blue-green network strategy

The partnership will develop an integrated blue-green network strategy that will:

- Provide a coordinated approach to delivering an enhanced and expanded blue-green network, reflecting the blue-green network principles and the directions outlined under *Opportunity 3: Protect, restore and enhance the natural environment, with particular focus on te ao Māori, the enhancement of biodiversity, the connectivity between natural areas and accessibility for people*
- Spatially identify where priority improvements are required
- Include a blue-green network programme to deliver the strategy's outcomes, including project prioritisation and phasing, and funding mechanisms
- Identify associated planning protection mechanisms to facilitate implementation.

As part of developing the strategy, partners will further investigate a sub-regional green belt concept. Subject to the outcome of this work, a green belt plan could form part of the strategy or be a standalone document.

Figure 8: Green belt concept

Greenbelt Concept

The concept of a greenbelt is to provide areas of land set aside for a range of different activities that have multiple benefits. It is an area where there is a dominance of open space for nature, rural production, and recreation. A greenbelt can be used to provide a large, connected area of natural environment spaces and to limit urban expansion. The range of different land types and land uses is shown below and could be highly natural land such as an existing river or forest, through to a playground, outdoor education or campground.

Insert illustration showing examples of land use activities and opportunities conceptually, for example: forest, native planting, community garden, rural production, recreation, fauna, riverbank.

Part 1 – Areas to protect, avoid and enhance

Identifying and mapping the areas to protect and avoid in the context of land development is important. This includes identifying areas to protect given their intrinsic values and importance, such as sites and areas of significance to Māori, and areas with significant natural features or landscapes; and areas to avoid given they are subject to natural hazards.

Areas to protect

- Sites and areas of significance to Māori
- Environmental areas and features
- Groundwater protection zone
- Highly productive land
- Strategic infrastructure

Areas to avoid

- Areas vulnerable to a high risk of flooding
- Areas vulnerable to a medium or high risk of coastal inundation, coastal erosion and tsunami inundation
- Areas at risk from rockfall, cliff collapse, mass movement and fault lines

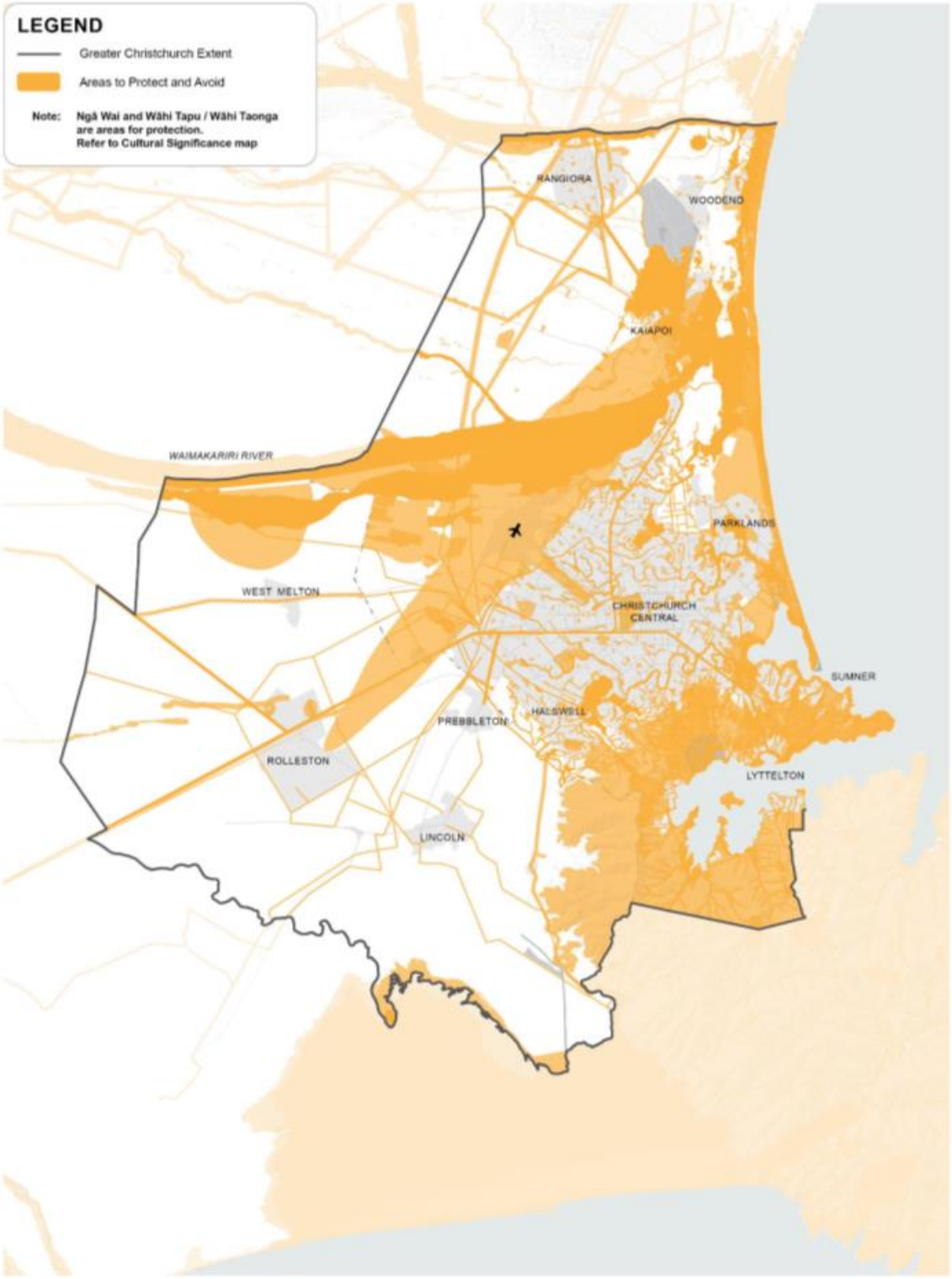
The methodology and reasoning for identifying the areas to protect and avoid is set out in the *Areas to Protect and Avoid Background Report*. The sites and areas of significance to Māori have been identified by mana whenua for district plan processes. The sensitivity of these sites and areas to urban development is a matter for engagement with mana whenua – not as part of a technical assessment.

Layering all the areas to protect and avoid on top of each other highlights the most constrained areas of Greater Christchurch for development (*see Map 5*). These areas include the eastern areas along the coastline, the Port Hills and Te Pātaka a Rākaihautū / Banks Peninsula, the areas to the north-west of Christchurch, and the areas surrounding Kaiapoi. These parts of the city region are affected by a variety of natural and man-made factors. The presence of Wāhi Tapu, Wāhi Taonga and Ngā Wai are also matters of further significance, where any urban encroachment will require engagement with and consideration by mana whenua.

It's important to note that the mapping in this section is based on the best available information from each council. It is acknowledged that for flood hazard areas, this map shows differing return periods as the basis for areas to avoid, based on the best available mapping information from each territorial authority. Where this map is used for the basis of assessment of specific locations of growth, the specific risk and mitigation framework applicable to the local authority area should be used.

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Map 5: Areas to protect and avoid



Opportunity 1: Protect, restore and enhance historic heritage and sites and areas of significance to Māori, and provide for people's physical and spiritual connection to these places

The area that encompasses Greater Christchurch is part of a wider landscape that holds significant historic and contemporary cultural associations and importance for Ngāi Tahu whānui, reflecting their occupation of the area for more than 1,200 years. The Spatial Plan recognises the importance of protecting the sites and areas of significance to Māori for generations to come, and that Papatipu Rūnanga are the entities responsible for the protection of tribal interests within their respective takiwā.

Context

- There are many sites and areas of significance to Māori in the Greater Christchurch area, reflecting the historic occupation and movement of Māori across the landscape for over a thousand years.
- Recognition of a cultural landscape is important to Ngāi Tahu identity, as it affirms connections to place and in some instances the opportunity for continuing cultural practices.
- Identifying cultural landscapes provides for the protection of Wāhi Tapu and Wāhi Taonga.
- There is the opportunity to integrate te ao Māori into planning and designing the built form of Greater Christchurch, and re-establishing a cultural presence.
- Both Māori and European cultural and historic heritage contribute to the identity of the Greater Christchurch area. It is important these values are recognised and protected through the Spatial Plan for the benefit of current and future generations.

Direction

1.1 Avoid urban development over Wāhi Tapu

1.2 Protect, restore and enhance Wāhi Taonga and Ngā Wai

Direction

1.1 Avoid urban development over Wāhi Tapu

1.2 Protect, restore and enhance Wāhi Taonga and Ngā Wai

The Greater Christchurch area encompasses a number of sites and areas of significance to Māori (*see Map 6*). This includes those recognised as Wāhi Tapu, Wāhi Taonga, Ngā Tūranga Tūpuna and Ngā Wai.

The protection of sites and areas of significance to Māori for the benefit of current and future generations is essential to the cultural identity of Greater Christchurch, acknowledging that their protection is a matter for engagement with mana whenua. It is important that the relationship mana whenua has with these sites and areas is able to be maintained and enhanced, which means urban development must be in locations that do not impact on them.

Wāhi Tapu

Wāhi Tapu are sites and places that are culturally and spiritually significant to the history and identity of mana whenua. They include sites such as urupā, pā, maunga tapu, kāinga, tūranga waka and places where taonga have been found. The term is generally applied to places of particular significance due to an element of sacredness or some type of restriction as a result of a specific event or action. Wāhi Tapu sites are to be protected according to tikanga and kawa to ensure the sacred nature of those sites is respected.

Wāhi Taonga

Wāhi Taonga are treasured places that have high intrinsic value and are valued for their capacity to shape and sustain the quality of life, and provide for the needs of present and future generations. Access to these areas is important to Ngāi Tahu identity.

Ngā Tūranga Tūpuna

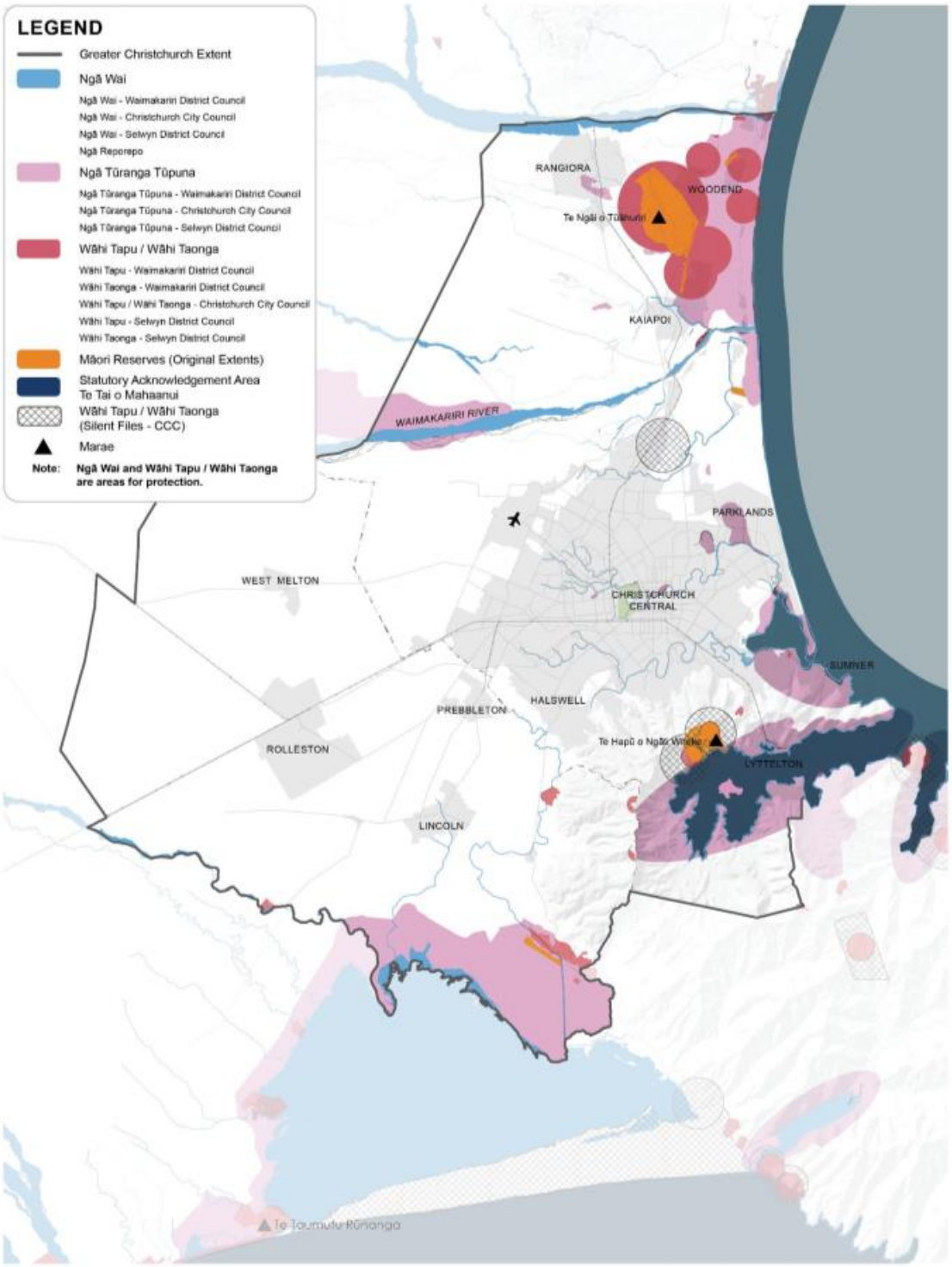
Ngā Tūranga Tūpuna are broader landscapes within which there are concentrations of a range of culturally significant sites. The maintenance of the integrity of these environments is an important outcome.

Ngā Wai

Ngā Wai encompasses water bodies and their margins, and include ngā awa (rivers), ngā roto (lakes), ngā hāpua (coastal lagoons), ngā repo (wetlands) and ngā puna (springs).

The entire coastline of Te Tai o Mahaanui is recognised as Ngā Wai. Te Ihutai / Avon-Heathcote Estuary, and the Ōtākaro / Avon, Ōpawaho / Heathcote and Pūharakekenui / Styx rivers, and a number of their tributary streams, in Christchurch City are identified as Ngā Wai. Throughout the Selwyn and Waimakariri districts, a variety of rivers are also identified as Ngā Wai, including the Waimakariri and some of its tributaries, the Waikirikiri / Selwyn and Hurutini / Halswell, along with Te Waihora / Lake Ellesmere.

Map 6: Sites and areas of significance to Māori



Opportunity 2: Reduce and manage risks so that people and communities are resilient to the impact of natural hazards and climate change

There are some areas of Greater Christchurch that are subject to significant risks from natural hazards and the effects of climate change. The Spatial Plan ensures that future development is directed away from these areas, investment in infrastructure reduces exposure and the resilience of communities in these areas is increased by taking action.

Context

- Climate change is increasing the likelihood of more frequent and severe natural hazards, including storms, flooding, coastal inundation and erosion, land instability, heat waves, droughts, high winds, and fires; as well as slower onset effects such as sea level rise.
- Low-lying coastal areas are particularly exposed to natural hazards, such as flooding and tsunamis.
- Climate change is already impacting local ecosystems and communities, and is disproportionately affecting mana whenua and vulnerable communities.
- Essential infrastructure is at risk, with the potential for disruption to power, transport and water supply during an extreme natural hazard event. These impacts could have serious consequences for human health, livelihoods, assets and the liveability of places.
- The decisions made now on how urban areas will grow and change will influence the patterns of exposure and vulnerability to natural hazards in the future.
- Focusing growth away from hazardous locations, investing in infrastructure that reduces exposure and adapting urban areas by incorporating functional elements into the blue-green network can all help to reduce some of the risks.
- In a global context, greenhouse gas emissions on a per capita basis are extremely high in Greater Christchurch. An emissions inventory for Christchurch City for the 2018/19 financial year showed that more than half of its total emissions came from the transport sector.

Direction

2.1 Focus and incentivise growth in areas free from significant risks from natural hazards

2.2 Strengthen the resilience of communities and ecosystems to climate change and natural hazards

Direction

2.1 Focus and incentivise growth in areas free from significant risks from natural hazards

A number of areas in Greater Christchurch are vulnerable to flooding, particularly in the low-lying eastern areas of Christchurch and areas surrounding Kaiapoi; while coastal areas are vulnerable to sea level rise, coastal inundation and erosion, and tsunamis (*see Map 7*).

Earthquakes are also a significant risk factor. The related risks of cliff collapse, rockfall and mass movement are constraints on development that particularly affect the hill suburbs of Christchurch.

It is essential that urban development is directed away from areas that are at significant risk from natural hazards, to ensure the safety and wellbeing of people, and the protection of buildings, infrastructure and assets. This will also reduce levels of exposure to the effects of climate change.

There are also some areas subject to natural hazards, but where these risks can be mitigated by building differently, such as increasing the floor levels of a building or ensuring building foundations meet a higher standard. These areas are categorised as having negotiable constraints (*see Map 8*).

2.2 Strengthen the resilience of communities and ecosystems to climate change and natural hazards

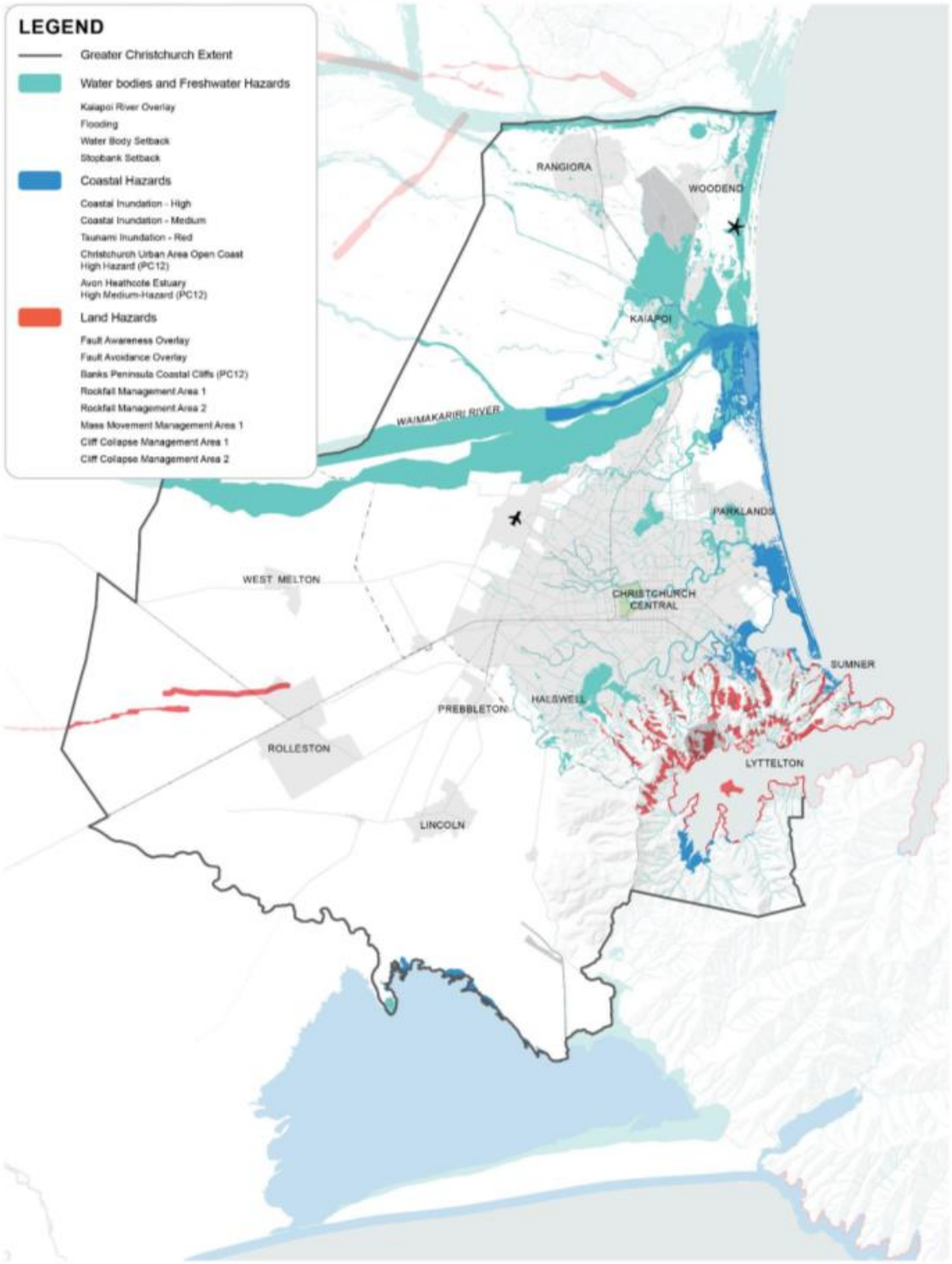
Climate resilience means reducing greenhouse gas emissions, responding to known risks from climate change, and enhancing the capacity of communities and ecosystems to recover and adapt to a changing environment.

Key ways to build resilience to climate change and natural hazards in Greater Christchurch include:

- Reducing transport emissions by supporting more people to live, work, shop, recreate and socialise within close proximity, and to use public transport when they do need to travel, by focusing growth through targeted intensification around centres and along public transport corridors
- Focusing growth away from areas likely to be more exposed to natural hazards that will be exacerbated by climate change, such as flooding and coastal erosion
- Protecting and restoring the natural environment to support communities and ecosystems be more resilient to climate change and natural hazards. Opportunities for Greater Christchurch include promoting enhanced coastal and wetland reserves to reduce flood risk, establishing new green spaces to help absorb and treat rainwater, planting trees to shade and cool urban areas, and creating new or enhanced forested areas.

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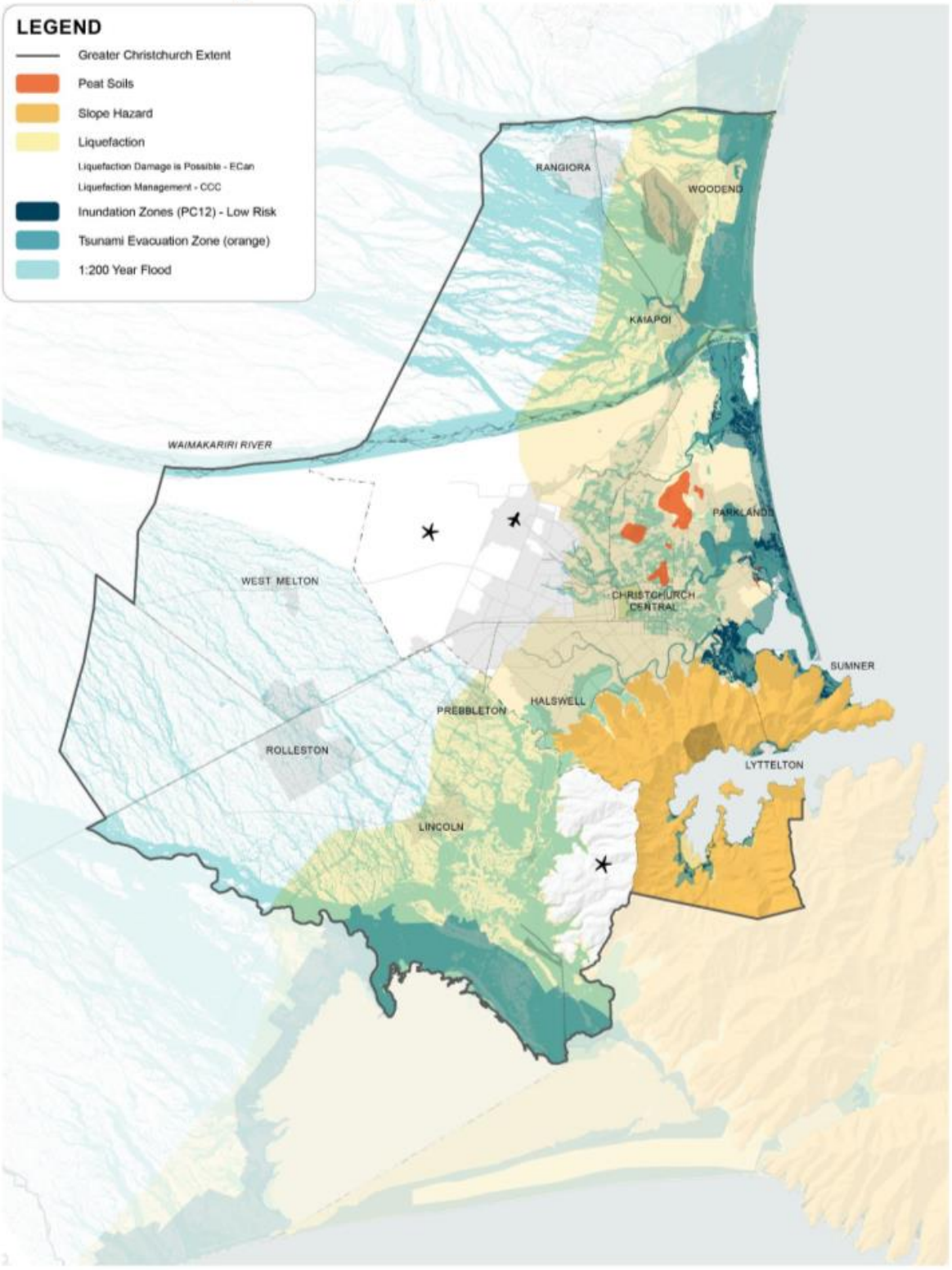
Map 7: Areas subject to natural hazard risks



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This map is based on the existing information and Geographic Information System (GIS) data from the four partner Councils. For some constraints, mapping data is unavailable, incomplete, or reliant on emerging policy with legal effect. Refer to the Technical Report for limitations and further information.

Map 8: Areas subject to negotiable natural hazard risks



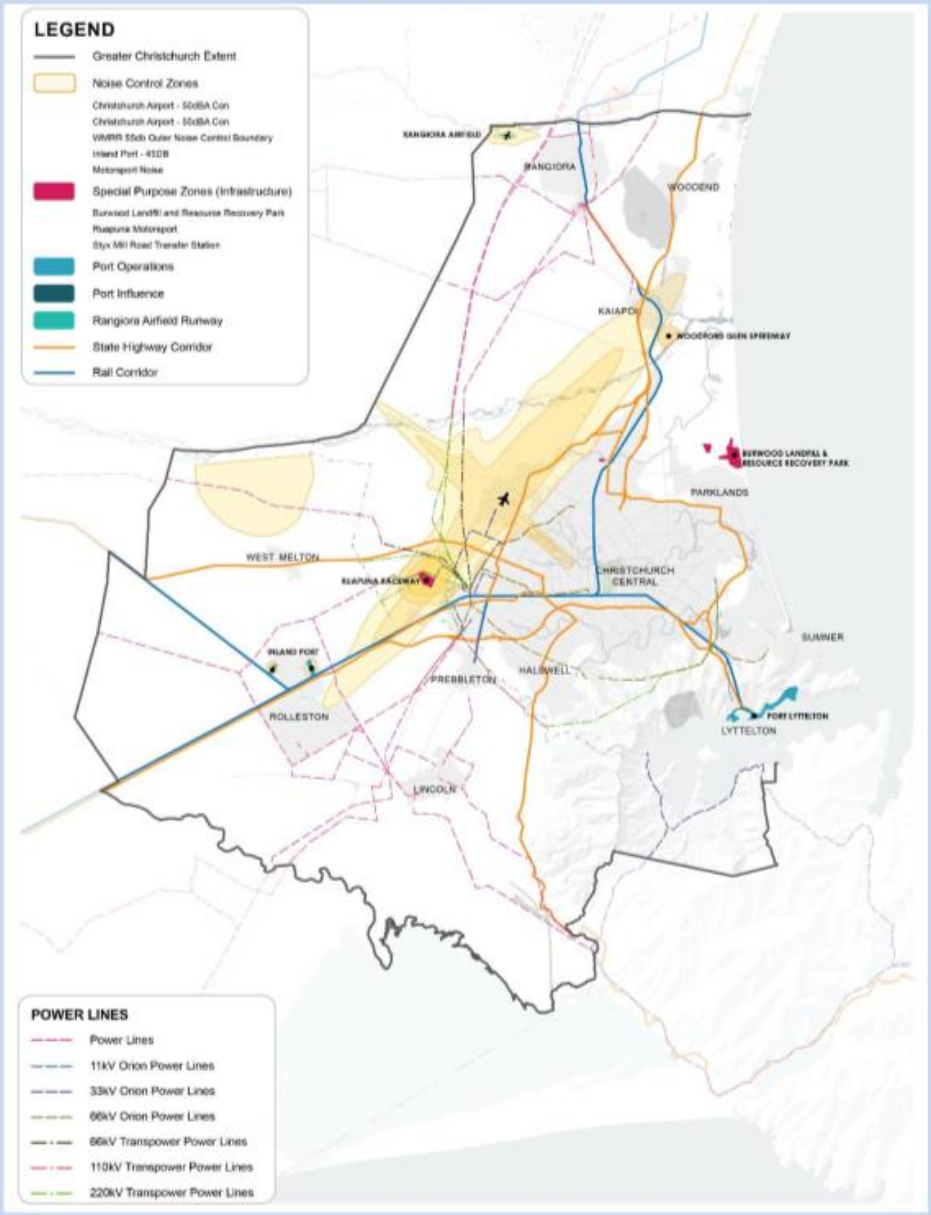
NTS

This map is based on the existing information and Geographic Information System (GIS) data from the four partner Councils. For some constraints, mapping data is unavailable, incomplete, or reliant on emerging policy with legal effect. Refer to the Technical Report for limitations and further information.

Protecting strategic infrastructure

Urban development should be avoided around strategic infrastructure to ensure the safety and wellbeing of residents, and to safeguard the effective operation, maintenance and potential for upgrades of this infrastructure. Key strategic infrastructure in Greater Christchurch includes Christchurch Airport, the Port of Lyttelton, the inland ports at Rolleston and Woolston, state highway and rail corridors, and the electricity transmission network (*see Map 9*).

Map 9: Strategic infrastructure



Opportunity 3: Protect, restore and enhance the natural environment, with particular focus on te ao Māori, the enhancement of biodiversity, the connectivity between natural areas and accessibility for people

A healthy natural environment is intrinsically linked with the wellbeing of people and places. The Spatial Plan recognises the importance of the natural environment as the foundation for the future of Greater Christchurch, particularly in the context of climate change and the urgent need to strengthen climate resilience. It commits to working with nature, not taking it over, when looking to the future.

Context

- The state of water bodies continues to degrade, with most having water quality issues and being in a poor state of cultural health. Groundwater that supplies Greater Christchurch's drinking water is at risk from changes to land use, increasing demands for water and the effects of climate change.
- There is currently good access to green spaces, although further planning and investment into parks and open spaces will be needed as the population grows.
- The tree canopy has declined over time, which has reduced habitats for wildlife, the amenity of urban environments, community wellbeing and climate resilience.
- Reductions in the extent and quality of the environment have had a detrimental effect on mana whenua and their relationship with water and natural resources.
- Highly productive soils have been lost to urban development and land fragmentation.
- Air quality has improved overall over the last decade, albeit some areas and communities still experience poor air quality.
- Te ao Māori provides a holistic and integrated approach to using, managing and protecting natural resources by acknowledging the inter-connectedness of all elements of the natural and physical world.

Direction

3.1 Avoid development in areas with significant natural values

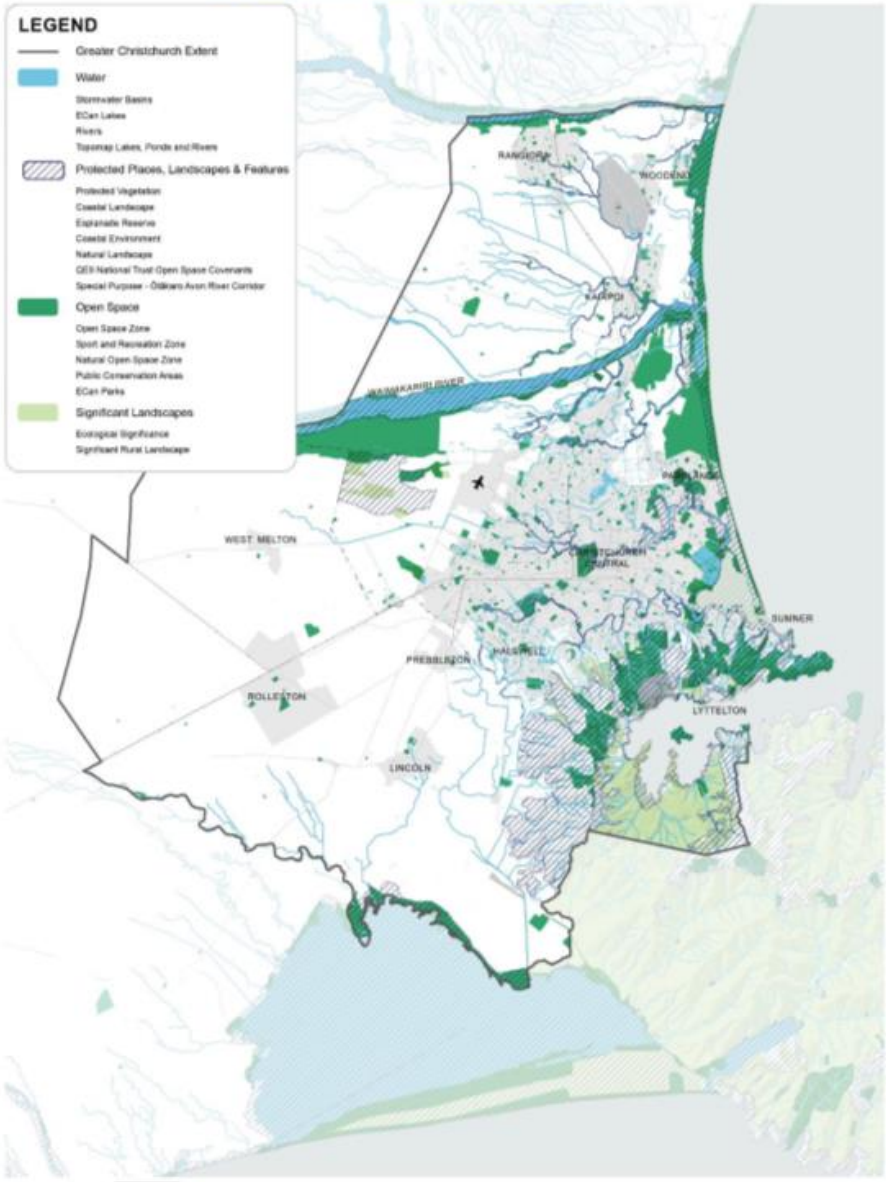
3.2 Prioritise the health and wellbeing of water bodies

3.3 Enhance and expand the network of green spaces

3.4 Protect highly productive land for food production

3.5 Explore the opportunity of a green belt around urban areas

Map 10: Environmental areas and features



The Greater Christchurch area is defined by a unique network of water bodies, including braided rivers with alpine origins, and spring-fed rivers and streams that flow through the urban environment and estuaries before reaching the coast. Its key blue elements include the Waimakariri, Ōtākaro / Avon and Ōpāwaho / Heathcote rivers, and Te Ihutai / Avon-Heathcote Estuary. The north-eastern shores of Te Waihora / Lake Ellesmere are also within the defined area of Greater Christchurch.

Key green elements in the Greater Christchurch area include the Ashley Rakahuri Regional Park, Waimakariri River Regional Park, Waitākiri / Bottle Lake Forest Park, Tūhaitara Coastal Park, the coastal environment, the Port Hills, parts of Te Pātaka a Rākaihautū / Banks Peninsula, local parks and open spaces, and the larger green spaces found in Christchurch – namely Hagley Park and the Ōtākaro Avon River Corridor. The dry grasslands of the Canterbury Plains also connect the city region to the wider Waitaha / Canterbury region.

Direction

3.1 Avoid development in areas with significant natural values

Te ao Māori acknowledges the interconnectedness of people and te taiao – the environment. Based on this Māori world view, kaitiakitanga is a way of managing the environment that recognises that people are an integral part of the natural world, not separate from it; and that there is an intergenerational duty to restore and enhance the mauri (life force) of water, land and ecosystems.

Greater Christchurch has many outstanding environmental areas, features and landscapes (*see Map 10*). Urban development must be focused away from areas with significant natural values and areas of cultural significance that include Wāhi Tapu and Wāhi Taonga. It is important that any possible encroachment of development on these areas is avoided, or involves early engagement and agreement with mana whenua.

3.2 Prioritise the health and wellbeing of water bodies

Water is a taonga that is culturally significant to Māori and essential to the wellbeing of all communities. Greater Christchurch has an integrated network of rivers, streams, springs, groundwater and aquifers, linked to estuaries and wetlands in the coastal environment. Restoring the health and wellbeing of water bodies is a priority for the city region.

Taking an integrated, catchment-based approach will support a higher quality water environment in Greater Christchurch. Examples of how this could be achieved include supporting waterway and wetland restoration and enhancement projects, setting extensive development setbacks from waterways, day-lighting urban waterways, and incorporating water sensitive urban design. Buffering water bodies with a riparian zone will also improve water quality and biodiversity, protect banks from erosion, alleviate the impacts of flooding, and support other amenity and recreational values.

The groundwater protection zone in Greater Christchurch must also be protected (*see Map 11*). This area covers the aquifers that provide the city region with its drinking water, which are vulnerable to contamination.

3.3 Enhance and expand the network of green spaces

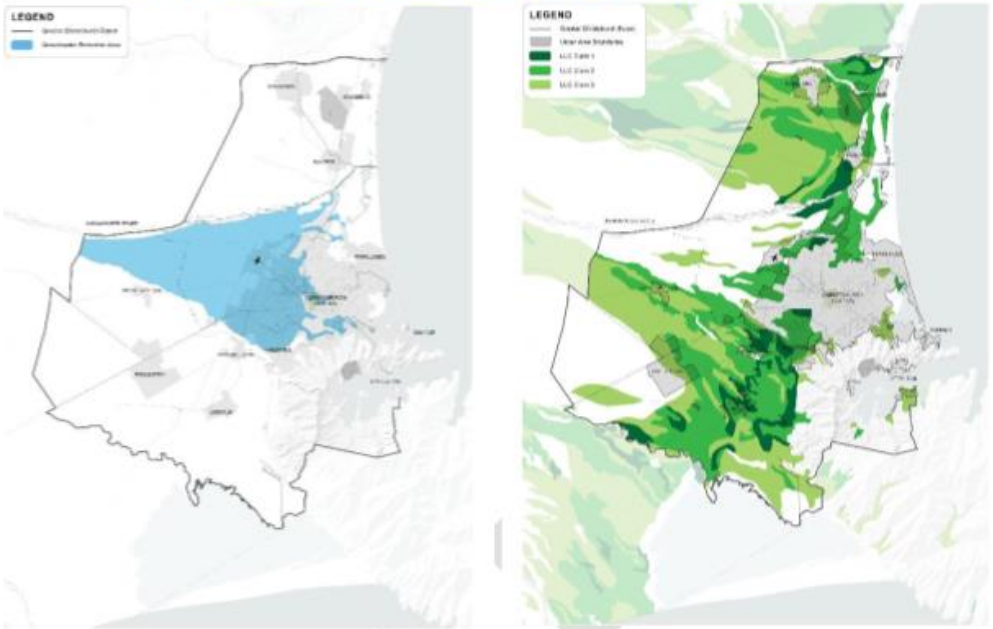
Indigenous biodiversity is important to the environment, culture, society and economy of Greater Christchurch. For Māori, the connection with nature is one of whakapapa.

An enhanced and expanded network of green spaces will improve biodiversity, support access and connectivity, and promote active travel. The vision is that every centre and town is connected to another via a green corridor. Opportunities to improve green connections include creating new green spaces; planting along waterways, streets and major transport routes; growing urban forests; and integrating public green spaces into major development projects. Creating stronger links to the Port Hills and Te Pātaka a Rākaihautū / Banks Peninsula is a particular opportunity to support increased biodiversity.

Improving the quality of the environment in higher density areas is critical. This can be achieved by designing and integrating vegetation (particularly trees) and indigenous biodiversity into these areas through enhanced streetscapes, parks and other public spaces, and with green spaces incorporated into private developments.

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Map 11: Groundwater protection zone / Map 12: Highly productive soils



3.4 Protect highly productive land for food production

Land that is particularly good for food production is a scarce and finite resource that has been lost as a result of urban expansion and land fragmentation. The highly productive soils found in parts of Greater Christchurch are a valuable resource (*see Map 12*).

The National Policy Statement for Highly Productive Land requires highly productive land to be protected from urban development, with some exceptions. Focusing urban development within the existing urban area – growing 'up' rather than 'out' – will help protect the best soils for agriculture. Where development does need to occur outside the existing urban area, this should avoid highly productive land where possible.

Implementation of the National Policy Statement for Highly Productive Land is subject to a regional planning process. The mapping of highly productive land, as per the definition in the National Policy Statement, has not yet been notified by the Canterbury Regional Council. The interim definition of highly productive land is land that is Land Use Capability Class 1, 2, or 3 (with some exceptions relating to identified growth areas). For the purposes of the Spatial Plan, these Land Use Capability Classes have been shown in *Map 12*, noting that exceptions do apply.

3.5 Explore the opportunity of a green belt around urban areas

A green belt is a planning tool used to maintain areas of green space around urban areas, often acting as a buffer between urban and rural areas. A green belt around Greater Christchurch's urban areas could help limit urban expansion; protect food producing land and green spaces for future generations; provide space for urban forests, wetlands and ecological restoration areas; increase resilience to the effects of climate change; and support recreational activities.

The concept of a green belt in Greater Christchurch needs to be explored in more detail and will be undertaken as part of the development of a blue-green network strategy.

Part 2 – An urban form for people and business

Opportunity 4: Enable diverse and affordable housing in locations that support thriving neighbourhoods that provide for people's day-to-day needs

The homes and communities that people live in provide the foundations for their wellbeing. Greater Christchurch's population is growing and changing, which will impact how and where people live. The Spatial Plan focuses on providing greater housing choice to meets the diverse needs of the community, including the need for more affordable homes; as well as enabling more people to live in places that are well-connected to employment, education, social and cultural opportunities.

Context

- Greater Christchurch has maintained a good supply of housing that is relatively affordable for middle to high income households, especially compared to other parts of the country.
- Delivering enough affordable housing continues to be a significant challenge, with an estimated 35,000 households in Greater Christchurch defined as being under housing stress in 2021.
- The current mix of housing types will not be suitable to meet needs in the future, particularly with the increase in one-person households and need for more multi-generational housing.
- The prosperity and wellbeing of Māori have been impacted by legislation, planning provisions and urban development strategies that have failed to recognise and prioritise the development of Māori Reserves or recognise the housing needs of Māori within urban areas. Housing options that meet the needs of Māori whānau are very limited in Greater Christchurch's urban areas.
- The level of accessibility to employment, services, green spaces and public transport varies across different parts of Greater Christchurch.
- The National Policy Statement on Urban Development and the Resource Management (Enabling Housing Supply and Other Matters) Amendment Act have removed barriers to development to allow growth 'up' and 'out' in locations with good access to existing services, infrastructure and public transport.

Direction

4.1 Enable the prosperous development of kāinga nohoanga on Māori Reserve Land, supported by infrastructure and improved accessibility to transport networks and services; along with the development of kāinga nohoanga within urban areas

4.2 Ensure sufficient development capacity is provided or planned for to meet demand

4.3 Focus and incentivise intensification of housing to areas that support the desired pattern of growth

4.4 Provide housing choice and affordability

4.5 Deliver thriving neighbourhoods with quality developments and supporting community infrastructure

Direction

4.1 Enable the prosperous development of kāinga nohoanga on Māori Reserve Land, supported by infrastructure and improved accessibility to transport networks and services; along with the development of kāinga nohoanga within urban areas

As outlined in *The prosperous development of kāinga nohoanga* section, legislation and a failure of strategic planning have prevented the development of Māori Reserves for subdivision, housing, and social and educational infrastructure, as well as the development of prosperous economic activities. This has impacted the prosperity and wellbeing of mana whenua.

Many Māori live within Greater Christchurch's urban areas where existing zonings do not contemplate or appropriately provide for kāinga nohoanga as a housing outcome. Consequently, the cultural needs of Māori have been overlooked.

A particular issue in supporting kāinga nohoanga is to ensure that infrastructure is provided that meets the needs of mana whenua for future development of kāinga nohoanga on Māori Land, with a specific focus on MR873 at Tuahiwi. Whilst policy and plan changes have occurred to enable kāinga nohoanga, this has not been supported with investment in infrastructure.

Within urban areas, it is assumed that the development of kāinga nohoanga will be able to be accommodated within the capacity of existing infrastructure or planned infrastructure upgrades.

Development of kāinga nohoanga is to be supported by partners as part of the commitment to give effect to mana whenua expectations and priorities. This will require a partnership with mana whenua to identify and respond to the specific infrastructure needs for Māori Reserve Land and within urban areas to ensure that there is sufficient capacity in, and feasible access to, local networks to enable this.

Further work between mana whenua and councils is needed to remove residual barriers in the planning framework, including the rezoning of all Māori Reserves and partnership in the provision of infrastructure to enable the development of Kāinga Nohoanga on Māori Land and within urban areas.

Key commitments and actions required to deliver this direction

- Partner with mana whenua to identify and respond to the specific infrastructure needs for Māori Reserve Land to ensure that there is sufficient capacity in, and feasible access to, local networks, to enable this.
- Partners to invest and provide infrastructure to support the development of MR873 and ensure mana whenua are active partners in decision making for these investments.
- Support mana whenua with upgraded infrastructure where needed in urban areas to enable kāinga nohoanga.
- Ensure that any future urban form for Greater Christchurch does not preclude or prevent the growth and development of Māori Reserve Land as settlements to the fullest extent possible. This includes ensuring Māori Land is not used or taken for public infrastructure required to service development on adjoining or proximate land.
- Ensure policy does not impede the ability to establish urban kāinga nohoanga.

- Enable and support the implementation of the Kāinga Nohoanga Strategy, which will set the expectations and implementation requirements to enable and support kāinga nohoanga.
- Initiate a process to rezone MR892 and MR959.

4.2 Ensure sufficient development capacity is provided or planned for to meet demand

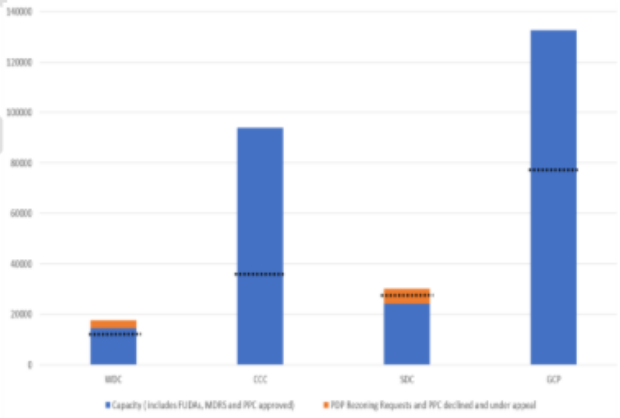
Meeting the projected demand for housing over the next 30 years is not a major issue for Greater Christchurch. This is particularly with additional greenfield areas being recently rezoned through private plan changes, and further intensification enabled across the city region as required by the National Policy Statement on Urban Development and Resource Management (Enabling Housing Supply and Other Matters) Amendment Act. In addition to these recent rezonings, greenfield areas are also being considered through rezoning submissions on the Selwyn and Waimakariri District Plan Review processes – the outcomes of which are yet to be determined.

Table 2: Sufficiency of housing development capacity to meet projected demand (2022 – 2052)

	Feasible capacity		Demand with margin		Surplus / Shortfall	
	Medium term (0 – 10 years)	Long term (0 – 30 years)	Medium term (0 – 10 years)	Long term (0 – 30 years)	Medium term (0 – 10 years)	Long term (0 – 30 years)
Waimakariri	5,950	14,450	5,600	13,250	+350	+1,200
Christchurch	94,000	94,000	14,150	37,500	+79,850	+56,500
Selwyn	11,550	24,100	10,000	27,350	+1,550	-3,250
Total	111,500	132,550	29,750	78,100	+81,750	+54,450

Based on the assumption that housing demand remains constant over time, a 60-year housing bottom line could translate into a requirement to accommodate an additional 160,000 households in Greater Christchurch – the equivalent to almost one million people living in the city region. This longer term growth could still be largely accommodated by the current housing development capacity in the city region as a whole as these figures also do not take account of the potential capacity from higher densities, which during the long term is likely to become more feasible and common in the market.

Figure 9: Sufficiency of housing development capacity to meet projected demand (2022 - 2052)



The response to long term shortfalls will be through exploring the feasibility of intensification, especially around centres and public transport routes, and increasing minimum densities for new greenfield areas. The broad locations for residential growth are shown in *Map 14 under Opportunity 5*. The Priority Development Areas will also be a significant tool to incentivise redevelopment and higher density housing (see the *A collective focus on unlocking the potential of Priority Areas* section). Further to this, locations for development to provide additional capacity should align with the direction in the Spatial Plan and desired pattern of growth.

4.3 Focus and incentivise intensification of housing to areas that support the desired pattern of growth

The focus of the Spatial Plan is to encourage greater intensification and higher densities around centres and public transport routes. The benefits of intensification in line with this desired pattern of growth include:

- More people living in closer proximity to services and employment
- A competitive public transport system to encourage mode shift
- Less reliance on private vehicle use
- A reduction in greenhouse gas emissions
- Efficient and effective use of existing infrastructure
- More affordable and diverse housing choices
- Less need for urban expansion onto highly productive land.

Greater intensification (medium and high density) is also being enabled as directed under the Resource Management Act (Intensification Instruments) and the National Policy Statement on Urban Development. This national direction enables greater intensification to occur across large parts of the urban area that may not necessarily be in close proximity to centres and public transport routes. The approach to focus intensification around centres and public transport routes will need to rely less on traditional planning tools (e.g. zoning) and look more at incentivisation, partnerships and investment.

A key approach to targeting intensification in the preferred locations is to identify Priority Development Areas, which are areas that the partnership will take a coordinated effort at a given time. They provide a mechanism for coordinated and aligned action across multiple agencies; to inform, prioritise and unlock investment, and drive collective accountability.

4.4 Provide housing choice and affordability

Greater intensification around centres and along public transport routes will help provide a range of dwelling types to meet the changing demand profile in Greater Christchurch, particularly from an aging population. This includes providing for the projected higher demand for smaller, more affordable units.

This will mean new housing will increasingly move towards medium and higher density housing types, such as townhouses, terraced housing and apartments. This will help to increase the variety of housing, including more affordable options. However, to do this across a spectrum of housing choice and demand, the intensification focus needs to be combined with continuing to provide for some greenfield areas in appropriate locations.

The focus on targeted intensification will support an urban form that helps address the strategic opportunities and challenges facing the city region, and to help address housing affordability for low income households.

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Figure 10: Population growth by age group in Greater Christchurch

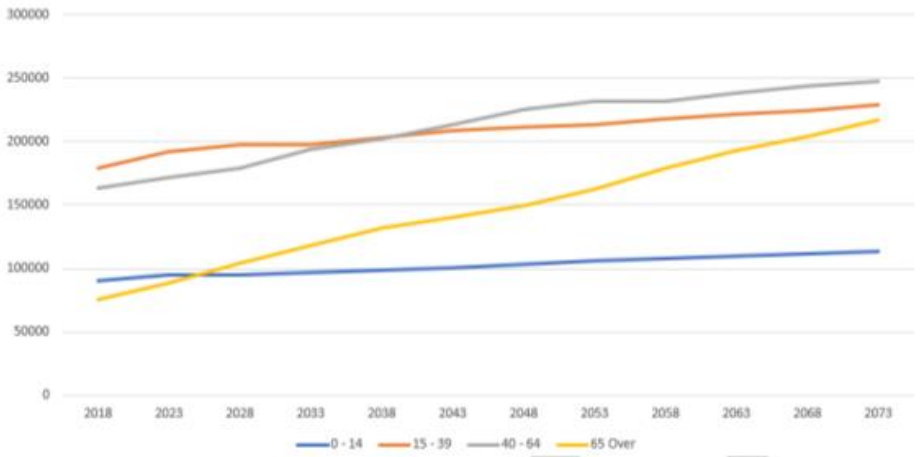
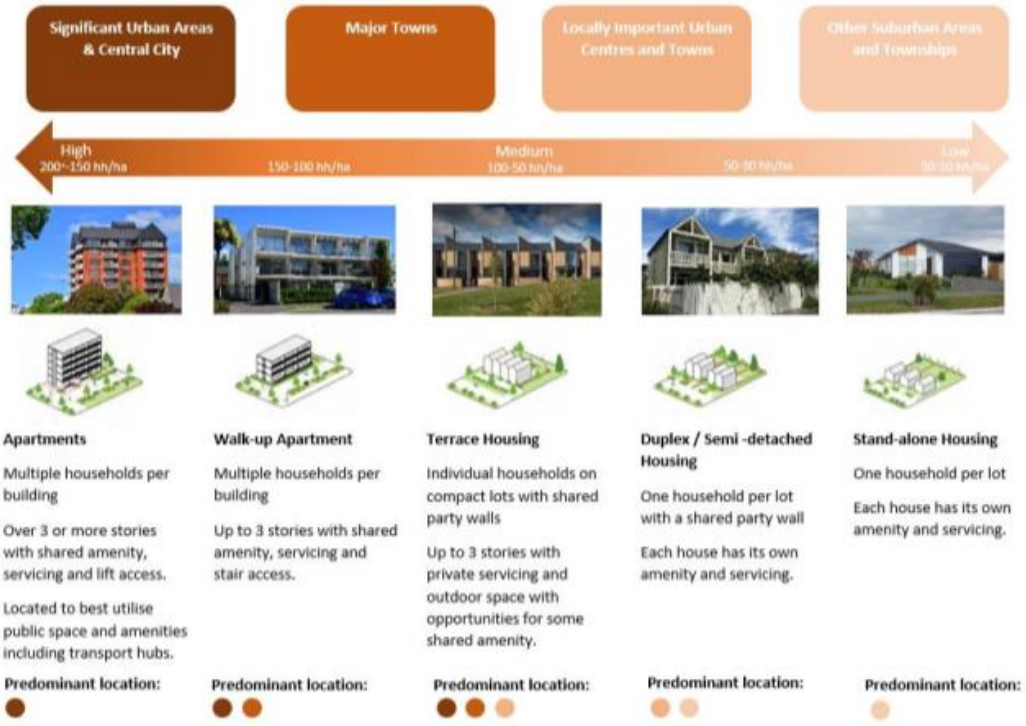


Figure 11: Housing typologies by density



Social and affordable housing needs

In comparison to other major urban centres in Aotearoa New Zealand, housing in Greater Christchurch is relatively affordable. However, the provision of social and affordable housing will become an increasingly critical issue.

Enabling higher density housing developments at different price points will be vital to meeting the projected increase in demand for smaller, more affordable dwellings. The cost of housing, both home ownership and renting, will continue to represent a significant component of household expenditure. New households will have different housing preferences and affordability constraints, but to better align the total housing stock across Greater Christchurch with the overall household composition, new development would need to favour smaller and more affordable housing types.

Smaller and multi-unit dwellings that take advantage of more efficient building construction techniques, and adopt new home ownership and rental models, can aid the provision of more affordable homes. Housing should meet the needs of the population at all stages of life.

Housing need in Greater Christchurch will be further addressed through the development of a joint social and affordable housing action plan, and through the key moves detailed earlier in the plan

Greenfield

The creation of 'greenfield' areas will continue to be part of how we accommodate more people so that we can provide a range of lifestyle choices that our communities' value. The focus of our spatial plan and greenfield development, is to encourage positive change in our urban form and function, recognising that while housing capacity needs to be provided, this must achieve and not undermine other directions and principles. To achieve this, successful future greenfield development needs to be:

1. Be well connected with employment, services and leisure through public and active transport networks
2. Be integrated with existing urban areas
3. Meet a need identified by the latest Housing and Business Development Capacity Assessment
4. Be at the right scale, density and location to minimise impact on highly productive land and existing permitted or consented primary production activities.

Further additional greenfield development may be required for the longer term and to provide for a population towards one million. Additional greenfield will be assessed through other statutory processes.

While there has been a trend towards increasing greenfield density over the last few years, the rate of change will need to increase to support the overall outcomes of the Spatial Plan. A technical report prepared to evaluate greenfield density uptake in Greater Christchurch included a density outcomes analysis of case study areas, as well as a national and international literature review to assess the implications of increasing residential density. The analysis found that there is a positive relationship between increases in density, more diverse housing typologies and the utilisation of more sustainable transport modes. The analysis found that the benefits of residential density increase incrementally. However, there are 'tipping points' of 25 to 30 households per hectare where residential density can deliver greater benefits.

4.5 Deliver thriving neighbourhoods with quality developments and supporting community infrastructure

Thriving neighbourhoods enable people and communities to meet their day-to-day needs, strengthen quality of life, and increase community connection and resilience. They are neighbourhoods that enable safe and

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equitable access for all; have high quality and safe open spaces, green spaces and public realm; and provide choice for social and affordable housing.

Vibrant communities with access to services

With good urban design, neighbourhoods and their centres can include communal spaces that are liveable, walkable, safe and attractive, and have good connectivity and accessibility. A network of vibrant and diverse urban and town centres that incorporates mixed-use and transport orientated development helps to improve access and add to people's wellbeing.

Figure 12: Features of connected neighbourhoods



Community facilities and open, green and public spaces

Community facilities contribute to strong, healthy and vibrant communities by providing spaces where residents can connect, socialise, learn and participate in a wide range of social, cultural, art and recreational activities. There has been extensive rebuilding and repairing of community facilities within Greater Christchurch, resulting overall in a modern network of well-designed buildings able to cater for optimal usage and meet residents' expectations. Following the completion of key facilities, such as the Parakiore Recreation and Sport Centre and Te Kaha Multi-Use Arena, the city region will be well serviced to support a broad range of community, tourist, recreational and sporting events.

Open, green and public spaces are areas for people to gather, meet, play and talk. These are places that can be used for cultural purposes, for social events or to engage in recreational activities with one another. There is an extensive network of open spaces across Greater Christchurch; ranging from regional parks, to local area and neighbourhood parks, to sports fields. As the population grows and urban areas densify, it will be important to ensure that open space provision is meeting the required levels of service for communities. Local area planning will be critical to guide future investment in open spaces, and importantly the prioritisation of new developments and upgrades to ensure equitable provision across the city region.

It is important to have neighbourhood meeting places, and community facilities and services, that support the needs of individuals and whānau. Such facilities and services also need to keep up with growth and adapt to the particular needs of each community.

Sense of connection and safety

How neighbourhoods, towns and cities are planned and develop impacts on the health and wellbeing of people and communities. Connected neighbourhoods and communities are safer, more resilient, and contribute to increased health and wellbeing. A sense of connection and safety also contributes to the conditions in which people live and work, their access to facilities and services, their lifestyles, and their ability to develop strong social networks.

, their access to facilities and services, their lifestyles and their ability to develop strong social networks.

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Opportunity 5: Provide space for businesses and the economy to prosper in a low carbon future

Greater Christchurch has a strong and diverse economy. Leveraging the economic assets and strengths of the city region is important for supporting business growth and increasing quality employment opportunities for the growing population. The Spatial Plan provides for the needs of businesses through a network of centres that are well connected and serviced by infrastructure.

Context

- Greater Christchurch is the principal economic, services and logistics centre for Te Waipounamu / South Island. The goods produced in Waitaha / Canterbury for export are primarily distributed via the Port of Lyttelton, Christchurch Airport, and the inland ports at Rolleston and Woolston.
- Hubs of tertiary and research institutions are found in Christchurch's Central City, including the Ara Institute of Canterbury, the tertiary teaching hospital and the health precinct; and at the University of Canterbury campus in Riccarton, and the Lincoln University and research campus in Lincoln.
- Six of the seven Crown Research Institutes in Aotearoa New Zealand are in Greater Christchurch.
- Employment in the Central City remains below pre-earthquake levels. Even prior to the earthquakes, the Central City was underperforming economically.
- Significant investment after the earthquakes in modern and resilient infrastructure, civic assets, and urban redevelopment, particularly in the Central City, has provided the capacity to cater for much higher levels of economic and population growth.
- The changing nature of business in the context of climate and technological changes will impact where businesses choose to locate and what they require from the urban environment.

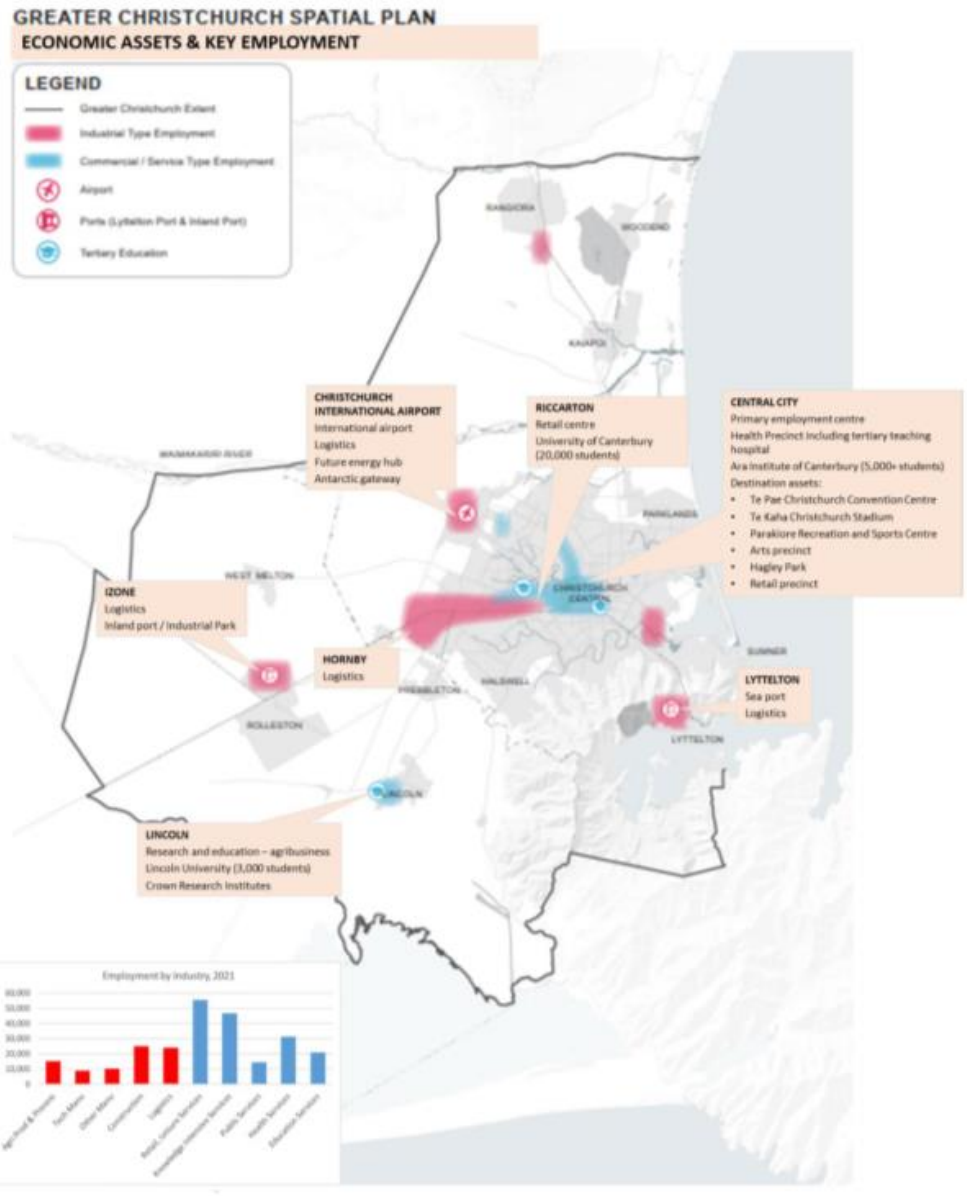
Direction

4.1 Sufficient land is provided for commercial and industrial uses well integrated with transport links and the centres network

4.2 A well connected centres network that strengthens Greater Christchurch's economic competitiveness and performance, leverages economic assets, and provides people with easy access to employment and services

4.3 Provision of strategic infrastructure that is resilient, efficient and meets the needs of a modern society and economy

Map 13: Key employment areas and economic assets



Much of Greater Christchurch's employment is spread across the services, production, construction and logistics sectors. The majority of its services (e.g. public services, business services and retail) are in Christchurch's Central City, and other urban and town centres. Industrial activity is concentrated around major transport hubs, such as the airport, sea port and inland port at Rolleston; and along key freight routes, such as in Hornby, Bromley and along the southern industrial spine.

Leveraging the opportunities of key economic assets for business innovation, commercialisation and growth is important for increasing quality employment opportunities in Greater Christchurch.

Direction

5.1 Sufficient land is provided for commercial and industrial uses well integrated with transport links and the centres network

There are two types of business land:

- Commercial land – for offices, shops and services; often co-located with housing and other activities.
- Industrial land – for manufacturing and warehousing activities; often located close to freight routes and usually separated from housing.

Greater Christchurch is well placed to meet the projected demands for commercial and industrial land over the next 10 years, and for industrial land over the next 30 years and beyond. However, the current supply of commercial land in the city region is not likely to be enough to meet the demand over the next 30 years.

More than enough industrial land is supplied in Christchurch, Selwyn and Waimakariri to meet demand over the next 30 years, with a particularly significant surplus in Christchurch. Assuming that demand for industrial land will decline in the long term due to global economic trends, the total supply of industrial land in Greater Christchurch may never be fully utilised.

Enough commercial land is also supplied in Christchurch, Selwyn and Waimakariri to meet demand over the next 10 years, but there is a shortfall of 110ha in Christchurch and 20ha in Selwyn when looking over the next 30 years. Shortfalls in commercial land are expected to be met through intensification in significant urban centres, major towns, and locally important urban centres and towns, as well as through rezoning of industrial land close to Christchurch's Central City to commercial and mixed-use. A focus for providing for commercial land will be those centres identified in *Map 14*, including the Priority Areas.

Table 3: Sufficiency of industrial land to meet projected demand (2022 – 2052)

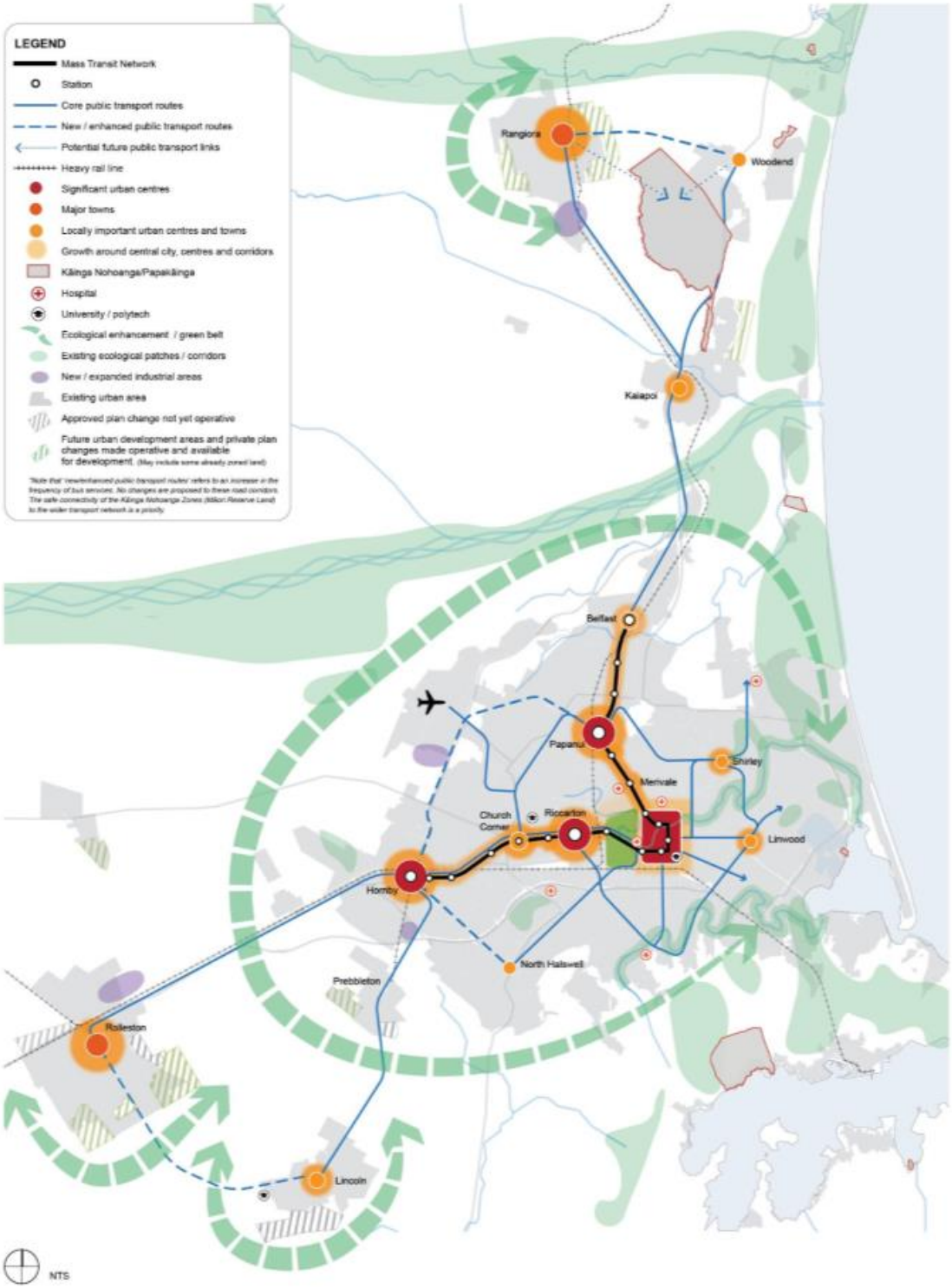
	Feasible capacity		Demand with margin		Surplus / Shortfall	
	Medium term (0 – 10 years)	Long term (0 – 30 years)	Medium term (0 – 10 years)	Long term (0 – 30 years)	Medium term (0 – 10 years)	Long term (0 – 30 years)
Waimakariri	32ha	102ha	31ha	79ha	1ha	23ha
Christchurch	663ha	663ha	36ha	119ha	627ha	544ha
Selwyn	377ha	425ha	131ha	347ha	246ha	78ha
Total	**1,073ha**	**1,190ha**	**198ha**	**545ha**	**874ha**	**645ha**

Table 4: Sufficiency of commercial land to meet projected demand (2022 – 2052)

	Feasible capacity		Demand with margin		Surplus / Shortfall	
	Medium term (0 – 10 years)	Long term (0 – 30 years)	Medium term (0 – 10 years)	Long term (0 – 30 years)	Medium term (0 – 10 years)	Long term (0 – 30 years)
Waimakariri	36ha	63ha	12ha	32ha	24ha	31ha
Christchurch	102ha	102ha	85ha	212ha	17ha	-110ha
Selwyn	19ha	30ha	18ha	50ha	1ha	-20ha
Total	**157ha**	**195ha**	**115ha**	**294ha**	**42ha**	**-99ha**

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Map 14: Broad locations of housing and business development capacity (700,000 people)



5.2 A well connected centres network that strengthens Greater Christchurch's economic competitiveness and performance, leverages economic assets, and provides people with easy access to employment and services

Centres are places where people congregate for business, education and leisure; where business happens; and where people are able to meet their everyday needs close to where they live.

A strong centres network will:

- Efficiently utilise existing infrastructure, including public transport and freight networks; and support efficient investments in future infrastructure
- Realise gains in economic productivity that can be achieved when related businesses and activities (such as tertiary institutions) are concentrated and co-located, including improved productivity by supporting knowledge transfer, attracting talent, and providing economies of scale of similar businesses that can attract other businesses and customers
- Co-locate economic activity where people live so that people can access employment and services easily by walking and cycling.

The focus on supporting future population and business growth in key urban and town centres, coupled with the planned enhancements to the public transport network, will support a strong network of centres in Greater Christchurch.

5.3 Provision of strategic infrastructure that is resilient, efficient and meets the needs of a modern society and economy

Strategic infrastructure networks include those required to:

- Manage wastewater and stormwater, and provide safe drinking water
- Provide for energy needs – household, business and transport
- Provide communication and digital connectivity
- Transport people and goods (covered under *Opportunity 6: Prioritise sustainable transport choices to move people and goods in a way that significantly reduces greenhouse gas emissions and enables access to social, cultural and economic opportunities*).

For infrastructure networks provided by local councils, including water infrastructure, each council is required to prepare an infrastructure strategy, and supporting network and catchment plans, to ensure there is sufficient capacity to meet current and future demands, and that environmental standards are met. Infrastructure strategies are updated based on changes to growth projections, such to inform decisions on infrastructure investment.

Telecommunications and energy infrastructure are provided by state-owned enterprises and the private sector. Telecommunications infrastructure is fundamental to the digital transformation of public and private infrastructure, while electricity infrastructure is fundamental to the transition to a low emissions future.

A key issue is the need to ensure that infrastructure is provided that meets the needs of mana whenua for the development of kāinga nohoanga on Māori Land, with a particular focus on MR873 at Tuahiwi. While policy and plan changes have occurred to enable kāinga nohoanga in Greater Christchurch, this has not been supported with investment in infrastructure. Within Greater Christchurch's urban areas, it is assumed that the development of kāinga nohoanga will be able to be accommodated within the capacity of existing infrastructure or through planned infrastructure upgrades.

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The close alignment of infrastructure provision with the growing and changing needs of people, communities and businesses requires strong partnerships and joint planning, including:

- Partnering with mana whenua to identify and respond to the specific infrastructure needs for Māori Reserve Land to ensure that there is sufficient capacity, and feasible access to, local networks; while also supporting mana whenua with upgraded infrastructure where needed within urban areas to enable kāinga nohoanga
- Establishing strong partnerships with providers of energy and digital technologies, and ensuring that planning for telecommunications and energy infrastructure is well integrated with new development.

Current and planned state of strategic infrastructure networks

- Wastewater networks have capacity to meet growth over the next decade, although some specific locations or sites may require infrastructure upgrades or alternative solutions to enable development. This includes MR873 at Tuahiwi, where a bespoke approach to the funding and delivery of services may be needed.
- The suburbs of Shirley and Aranui in Christchurch are serviced by a vacuum sewer system, which are at or near operational capacity and currently with no feasible solution to increase capacity.
- Most sites have the ability to mitigate stormwater effects on-site, or have planned local catchment solutions and programmes to address water quality and quantity issues. For some sites, on-site mitigation infrastructure may be required that will add to development costs. However, this does not preclude development from occurring.
- In Christchurch, major water supply upgrades have been completed or are planned for completion over the next 10 years. A focus for water supply assets will be over $200 million invested in the improvement and maintenance of the reticulation network. This will reduce leakages and improve the long term sustainability of the water supply, ensuring these assets remain fit-for-purpose to accommodate future growth and to meet required water quality and health standards.
- Growth in the use of electricity for transport will necessitate greater provision of electric charging networks in Greater Christchurch. This is expected to be provided by the private sector. Over time, there may be a requirement for greater local generation of green energy.
- Telecommunications technology is continually changing to meet the expectations of customers for new, faster and uninterrupted digital experiences. The challenge is finding locations to increase the density of telecommunications networks to meet the demand generated by growth. Redevelopment and new growth areas need to integrate network infrastructure with land use and the needs of communities.

Part 3 – Connecting people and places

Opportunity 6: Prioritise sustainable transport choices to move people and goods in a way that significantly reduces greenhouse gas emissions and enables access to social, cultural and economic opportunities

A transformational shift in how people travel is needed to achieve major reductions in transport emissions. This is one of the biggest challenges facing Greater Christchurch and will require substantial improvements in its transport system. The Spatial Plan takes an integrated approach to strategic land use and transport planning to provide a pathway to achieving a more sustainable, accessible and equitable transport future.

Context

- There is a strong dependence on cars to travel in Greater Christchurch.
- Population growth will continue to increase the vehicle kilometres travelled by cars and other light vehicles based on current travel patterns. Substantial reductions in vehicle kilometres travelled by the light fleet is needed to achieve emissions reductions targets.
- Growth in vehicle kilometres travelled will also increase congestion, which has implications for health, safety, amenity, productivity and the environment.
- Shifting transport choices away from cars requires significant improvements to public and active transport, and measures to encourage people to change their travel behaviour; along with an urban form that supports people to take shorter trips to meet their daily needs and activities.
- The prosperous development of kāinga nohoanga on Māori Reserve Land requires significant improvements to levels of accessibility to surrounding transport networks and services.
- The volume of freight is forecast to continue to increase in the future, while the emissions from heavy transport needs to decrease to support reductions in transport emissions.
- The strategic road and rail networks are essential for moving goods into, out of and within the city region, and supporting it to be the primary logistics hub for Te Waipounamu / South Island.

Direction

6.1 Enable safe, attractive and connected opportunities for walking, cycling and other micro mobility

6.2 Significantly improve public transport connections between key centres

6.3 Improve accessibility to Māori Reserve Land to support kāinga nohoanga

6.4 Develop innovative measures to encourage people to change their travel behaviours

6.5 Protect the effective operation of the freight network

Map 15: Transport network



Direction

6.1 Enable safe, attractive and connected opportunities for walking, cycling and other micromobility

A key component of the focus on targeted intensification is the creation of an urban form that supports and encourages as many trips as possible being made by active travel – walking, cycling and other modes of micro mobility (such as scooters). Achieving this requires not only an increase in density of development in centres, but also a commitment to urban design that prioritises active travel within and between communities – making it safe and convenient.

Some ways that active travel could be supported include ensuring good walking and cycling access within local communities and to local centres; extending the network of dedicated cycleways and cycle lanes to create a comprehensive network that connects key centres and destinations; creating low speed zones and limited access streets in residential areas; and rebalancing the use of roads and streets to reflect the functions of place and movement.

6.2 Significantly improve public transport connections between key centres

Reducing the reliance on cars means encouraging people to use public transport more often. This requires significant improvements to public transport services to ensure they offer an attractive alternative to cars for a broader range of trips, particularly those less suited to active travel.

An important first step to improving Greater Christchurch's public transport network is to accelerate the implementation of planned improvements to the existing bus network, as set out in the Greater Christchurch Public Transport Futures programme. This involves frequency improvements coupled with infrastructure investments that will support faster and more reliable journey times on core bus routes. These core routes provide connections to Christchurch's Central City and other key centres where more intensive development is planned. The programme includes reallocation of road space on core routes to enable priority way for buses.

A key feature of the future public transport network in Greater Christchurch is the proposed mass rapid transit service that would offer a high frequency and capacity 'turn-up-and-go' service on the strategic growth corridors along Papanui Road and Riccarton Road, linking with the Central City. The delivery of this service would involve a phased implementation, starting initially between Papanui and Church Corner, then extending to Belfast and Hornby, and with improved connections to key towns in Selwyn and Waimakariri.

Higher density residential and commercial development within the walkable catchments of mass rapid transit stations would support a higher share of trips being made using public transport, which would in turn support frequency and capacity improvements.

6.3 Improve accessibility to Māori Reserve Land to support kāinga nohoanga

Planning and investing in improved accessibility to Māori Reserve Land by public and active modes of transport is necessary to support the prosperous development of kāinga nohoanga in Greater Christchurch. Delivering better connections to Māori Land, as well as supporting kāinga nohoanga within urban areas with improved accessibility, will involve a partnership approach between mana whenua, and councils and Waka Kotahi.

The development of Greater Christchurch's transport network in the future must also not preclude or prevent the development of Māori Reserve Land as settlements to their fullest extent possible. This includes ensuring that Māori Land is not used or taken for public infrastructure required to service development on adjoining or proximate land.

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6.4 Develop innovative measures to encourage people to change their travel behaviours

A significant change in travel behaviour needs to occur to meet the objective for a more sustainable, accessible and equitable transport system in Greater Christchurch. Achieving mode shift from cars to public and active modes of transport will be particularly important for reducing vehicle kilometres travelled by cars and other light vehicles, and contributing to emissions reduction targets.

The focus on targeted intensification in urban and town centres, and along public transport corridors, together with the proposed improvements to public and active modes of transport, will provide a strong platform for the shift away from cars. However, reducing the reliance on cars will also need to be supported by planning and investing in systemic changes in travel behaviours, recognising the massive shift that needs to occur largely within the next decade.

Some ways that effective travel demand management and behaviour change initiatives could be delivered include building awareness and understanding about the range of low emissions travel options through information and education initiatives; incentivising the use of public and active transport through appropriate pricing and promotions; managing car parking policies; and supporting central government investigations into future road pricing options.

6.5 Protect the effective operation of the freight network

As the main freight and logistics hub for Te Waipounamu / South Island, it is essential that the development of Greater Christchurch continues to support a well-functioning freight network. This means ensuring that the strategic road and rail connections to key freight and logistics hubs, including the Port of Lyttelton, Christchurch Airport and the inland ports at Rolleston and Woolston, are not compromised by development and uncontrolled growth in travel demands on the network.

This is likely to require steps in the future to prioritise the use of road space on strategic freight routes, primarily the state highways, and to direct housing development away from those routes to ensure that the amenity of residential areas are not compromised. In some cases, it may be necessary to consider relocating strategic freight routes to reduce the potential conflict with residential and commercial intensification.

Shifting freight from road to rail and coastal shipping will help to reduce emissions from freight, as well as reduce the pressure on the road network in Greater Christchurch.

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Implementation

Joint work programme

The partnership has developed a joint work programme comprising key actions and initiatives, and a selection of Priority Areas, that will help to implement the direction of the Spatial Plan. The work programme will also inform the investment decisions made by partners.

An indication of what each component of the joint work programme will entail is provided below, along with how they align with the six opportunities of the Spatial Plan.

The partnership will agree the scope and resources needed to deliver the joint work programme.

The Whakawhanake Kāinga Komiti will receive biannual updates on the progress of the joint work programme.

The Spatial Plan is an enduring document, with the scope for new Priority Areas, key actions and initiatives, and tools being added to the joint work programme if they should arise in the future. The plan will be reviewed and updated (as needed) every five years.

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Action / Initiative	Purpose	Opportunity 1: Protect historic heritage and sites and areas of significance to Māori	Opportunity 2: Reduce risks from natural hazards and climate change	Opportunity 3: Protect, restore and enhance the natural environment	Opportunity 4: Support thriving communities with diverse and affordable housing	Opportunity 5: Provide space for businesses and the economy to prosper	Opportunity 6: Prioritise more sustainable modes of travel	Supporting Agencies	Timing
Greater Christchurch Transport Plan (including Mass Rapid Transit)	To plan and coordinate the development of an integrated transport system that will encourage mode shift, reduce vehicle kilometres travelled and transport emissions, and help shape the urban form.							Urban Growth Partners	Ongoing
Kāinga Nohoanga Strategy	To provide direction to partners on how to support and enable kāinga nohoanga on Māori Land and within urban areas.							Urban Growth Partners	Ongoing
Priority Areas	To enable aligned and coordinated action across multiple agencies to inform and prioritise investment to achieve change and growth that will not be delivered by the market on its own.							Urban Growth Partners, Developer Sector	To be determined
Joint Housing Action Plan	To create a housing action plan that ensures the entire housing continuum is working effectively to provide affordable housing choice and diversity.							Urban Growth Partners, Community Housing Providers, Developer Sector	Short term

Blue-Green Network Strategy (including Green Belt Concept)	To develop an integrated blue-green network strategy reflecting the blue-green network principles and environmental directions. This strategy will also include investigating options to establish a Green Belt Action Plan.							Urban Growth Partners	Medium term
Economic Development Plan	To create a comprehensive economic development plan that integrates and coordinates existing strategies and plans to realise the Spatial Plan's aspirations for economic prosperity.							Urban Growth Partners, Economic Development Agencies, Canterbury Employers Chamber of Commerce, Tertiary Education Providers	Medium term
Statutory tools	To assess, propose and implement the suite of statutory tools that will give effect to the Spatial Plan and enable delivery of the joint work programme.							Urban Growth Partners	Short term
Non-statutory tools	To assess, propose and implement the suite of non-statutory tools that will give effect to the Spatial Plan and enable delivery of the joint work programme.							Urban Growth Partners	Medium term

Key

	Major contribution to the opportunity
	Moderate contribution to the opportunity
	Minor contribution to the opportunity

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Tools

Tools that enable the Spatial Plan to deliver on its directions can either be statutory or non-statutory. Previous growth plans and strategies have predominantly focused on statutory tools, which have been implemented by councils. The partnership believes a more flexible approach comprising a mix of statutory and non-statutory tools will be more effective in delivering on the outcomes sought by the plan.

The joint work programme will consider a broad range of both statutory and non-statutory tools to be used for selection by the partnership. The responsibility for implementing these tools will reside with the partner that has the authority or is best suited to deliver the tool.

Partnerships

The partnership is committed to showing visible leadership and using a collaborative approach to address the issues identified for Greater Christchurch. Although implementation of the Spatial Plan will principally be the domain of councils, mana whenua and government agencies, the private sector, third sector and community also have a key role to play in ensuring the shared vision for the future is realised.

Coordinated action with infrastructure providers and the development sector will be of particular importance to enabling the type and scale of development needed to achieve the desired pattern of growth. It will be crucial that investments are aligned with the planned direction set out in the Spatial Plan, which will require strong working relationships between councils, infrastructure providers, developers and the property sector.

Monitoring

The partnership will establish an implementation plan and mechanisms to monitor progress in achieving the opportunities, directions and key moves set out in the Spatial Plan, and for reporting on progress of the joint work programme. The progress made on the work programme will be reported bi-annually to the Whakawhanake Kāinga Komiti.

The Spatial Plan will be reviewed every five years, incorporating the latest release of census information from Stats NZ. This will ensure that future iterations of the plan can respond to changing demographic, social, economic and cultural factors.

The joint work programme should be reviewed and updated every three years to coincide with council's long term planning processes to ensure the partnership prioritises and adequately resources the delivery of the Spatial Plan (and its future iterations).

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Greater Christchurch Partnership

Te Tira Tū Tahi
One Group, Standing Together

Greater Christchurch Housing Development Capacity Assessment

March 2023

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Definitions and Abbreviations

The following table defines commonly used terms, acronyms, and abbreviations in this document.

Term	Definition
BDM	Build Development Model
CCC	Christchurch City Council
Development Capacity	As defined in the NPS-UD, means: the capacity of land to be developed for housing or for business use, based on: a. the zoning, objectives, policies, rules and overlays that apply in the relevant proposed and operative RMA planning documents; and b. the provision of adequate development infrastructure to support the development of the land for housing or business use.
FDS	Future Development Strategy
Feasible or Feasibility	As defined in the NPS-UD, means: a. for the short term or medium term, commercially viable to a developer based on the current relationship between costs and revenue. b. for the long term, commercially viable to a developer based on the current relationship between costs and revenue, or on any reasonable adjustment to that relationship.
FUDA	Future Urban Development Areas identified through Our Space
GC	Greater Christchurch
GCP	Greater Christchurch Partnership
GIS	Geographical Information System
HCA	Housing Capacity Assessment
LDM	Land development Model
LTP	Long Term Plan
MBIE/MfE feasibility tool	Refers to the feasibility tool provided in excel format to the Greater Christchurch Partnership. The reference may be to part of the tool, indicated as (land development) or (building development).
NPS-HPL	National Policy Statement on Highly Productive Land 2022
NPS-UD	National Policy Statement on Urban Development 2020
QV	Quotable Value
RMA-EHS	Resource Management Act (Enabling Housing Supply and Other Matters) Amendment Act 2021
RV	Rateable value, as recorded by Councils for rating purposes.
SA2	Stats NZ's Statistical Area 2
SDC	Selwyn District Council
TA	Territorial Authority
UDS	Urban Development Strategy
WDC	Waimakariri District Council

2. Executive Summary

The National Policy Statement on Urban Development 2020 (NPS-UD) requires tier 1 local authorities, every three years[1], to provide at least sufficient development capacity in their region or district to meet expected demand for housing: (a) in existing and new urban areas; (b) for both standalone and attached dwellings; and (c) in the short, medium, and long term. The relevant sections of the NPS-UD are found in Appendix 1: NPS-UD . Christchurch is defined as a Tier 1 urban environment and includes the local authorities of Canterbury Regional Council, Christchurch City Council, Selwyn District Council, and Waimakariri District Council.

The Greater Christchurch Partnership has worked collaboratively since 2003 to manage growth in the Greater Christchurch area. The existing settlement pattern was first outlined in the Greater Christchurch Urban Development Strategy (UDS), implemented under Chapter 6 to the Canterbury Regional Policy Statement and District Plans. An update to the settlement pattern was undertaken in 2019 to manage growth within the 2018-2048 period and to address the policy requirements of the National Policy Statement for Urban Development Capacity, including the first Housing Capacity Assessment (HCA) in 2018.

The 2021 HCA included an assessment of expected urban housing demand to 2051 for Christchurch, Selwyn and Waimakariri, and the sufficiency of development capacity. It builds upon the 2018 Housing Capacity Assessment undertaken under the previous National Policy Statement on Urban Development Capacity (NPS-UDC) and responds to key changes in the policy requirements between the NPS-UDC and NPS-UD (refer to Appendix 1: NPS-UD Objectives and Policies). This 2023 HCA update provides new capacity figures based on the TA's responses to the Resource Management (Enabling Housing Supply and Other Matters) Amendment Act 2021 (EHS Act) and adds more detail with typology while continually improving monitoring and integration.

The assessment findings are based on the best available information and models at that point in time. For expected demand, this is based principally on Statistics New Zealand's population estimates and projections and the associated assumptions. Expected demand is sensitive to changes in international migration assumptions, particularly for calculating the long-term sufficiency. An increase or decrease in this assumption will impact the sufficiency numbers for Greater Christchurch in the long term. In this respect it's important to note this uncertainty over a longer time frame with regard to being absolute on what long term sufficiency might be. The numbers provided in this report are based on an agreed scenario and they are framed by the assumptions outlined in the report.

In terms of supply, the assessment utilises Council's respective growth and land development models, and feasibility models (developed from the MBIE/MfE Feasibility Tool). Any figures presented within this assessment should be treated with some caution because factors that influence housing demand and supply, such as population growth, government policy, economic conditions, or the ability to achieve commercially attractive returns on development, may change significantly over the next thirty years. Further, it is too early to understand the potential change created by the EHS Act. While plan-enabled capacity has ballooned, the meaningful impact on feasible capacity will be felt over time as the type of development delivered becomes more intense.

Key demand trends for Greater Christchurch include:

- a growing population from 536,500 in 2022 to 708,840 in 2052, an increase of 172,340 people;
- the number of households increasing by 79,088; and
- a changing typology profile reflecting the demographics changing, an aging population resulting in strong growth in the number of 'couple only' and one person households.

This assessment will also be used to help inform work on the Greater Christchurch Spatial Plan (which will comply with the requirements for a Future Development Strategy under the NPS-UD). The Spatial Plan will consider this scenario alongside other scenarios to determine the preferred direction where and how the area should grow and develop into the future and help address long term capacity shortfalls.

[1] In time to inform the development of council long-term plans.

3. Sufficiency

The sufficiency shown here is for the urban environment of Greater Christchurch. This includes Christchurch City and the surrounding towns of Rangiora, Kaiapoi, Woodend, Rolleston, Lincoln, Prebbleton, and West Melton.
Key assumptions are:

- Capacity proposed through EHS Act variations and plan changes proceeds;
- For the towns, densities within greenfield areas are similar to what is occurring now, whereas intensification areas are higher.
- Intensification is most likely to occur where there is older housing stock, in and around town centres and close to Public Transport routes.
- Intensification will not occur in the short to medium term in areas with newer housing stock.

3.1. Short & Medium-Term Urban Capacity Sufficiency

At a Greater Christchurch level, there is likely to be sufficient capacity based on the current assumptions across all the TAs to meet medium-term demand (see Table 1).

Table 1: Urban Housing Sufficiency within TAs in the Short & Medium Term (2022 – 2032)

Area	Feasible Capacity	Demand with Margin	Surplus / Shortfall
Waimakariri	5,950	5,600	+350
Christchurch	94,000	14,150	+79,850
Selwyn	11,550	10,000	+1,550
Total	111,500	29,750	+81,750

***Rounded to the nearest 50**

3.2. Short, Medium, & Long-Term Urban Capacity Sufficiency

Over the long-term (next 30 years) there is likely to be sufficient capacity based on the current assumptions across the TAs to meet demand. At a District level however, there is a shortfall within Selwyn over the long term of around 3250.

***Table 2: Urban Housing Sufficiency within GCP in the Short, Medium, & Long Term** (2022 – 2052)*

Area	Feasible Capacity	Demand with Margin	Surplus / Shortfall
Waimakariri	14,450	13,250	+1,200
Christchurch	94,000	37,500	+56,500
Selwyn	24,100	27,350	-3,250
Total	132,550	78,100	+54,450

***Rounded to the nearest 50**

3.2.1. Response to Shortfall

In response to the identified shortfall in Selwyn, the Future Development Strategy will need to indicate broad locations to where this long-term demand will be met. The response to this shortfall will be through exploring improving the feasibility of intensification, especially around centres and PT routes and increasing minimum densities (for example, an increase from 15hh/ha to 16hh/ha would meet that shortfall). These areas will be part of any Priority Development Areas identified through the Greater Christchurch Spatial Plan.

4. Housing Bottom Lines

Following the capacity assessment, local authorities must insert housing bottom lines into their relevant plans. The bottom lines should clearly state 'the expected housing demand plus the appropriate competitiveness margin in the region and each constituent district'[2]. The regional council inserts the housing bottom line for the urban environment into its regional policy statement, while the territorial authorities insert the attributed proportion into their district plans.

The urban environment, as agreed by the Greater Christchurch partnership, is the Greater Christchurch Boundary. However, this assessment has considered all main urban areas within the TAs not just the ones within the Greater Christchurch boundary. This is to inform the spatial plan work, recognising the growing size and influence of towns around the boundary of Greater Christchurch.

The townships included in this information are for Waimakariri – Rangiora, Kaiapoi, and Woodend; and for Selwyn – Rolleston, Lincoln, Prebbleton, and West Melton.

Therefore, the Housing Bottom Lines to be inserted into the relevant plans are outlined below.

Table 3: Housing Bottom Lines

Area	Short-Medium Term	Long Term	Total
Waimakariri	5,600	7,650	13,250
Christchurch	14,150	23,350	37,500
Selwyn	10,000	17,350	27,350
Greater Christchurch	29,750	48,350	78,100

[2] NPS-UD 3.6 (1)

5. Demand Analysis

This section identifies two key demand issues from Section 7, especially Section 7.3, and establishes what opportunities there are under the NPS-UD to improve affordability and deliver well-functioning urban environments across Greater Christchurch.

5.1. Key Assumptions

The following are the key assumptions located throughout the report when assessing demand:

- Stats NZ international migration assumptions. The Stats NZ projections assumes change in migration, both into the country (international) and throughout the country (internal). These are outlined in Section 7.4.1. It is important to consider that migration rates vary and are influenced by international factors. Changes to migration policies or impacts of global events (e.g., pandemics) either constrain or enable more international migration.
- Stats NZ also project internal migration. This tracks movement between areas within New Zealand. This is harder to predict as people move for various reasons that change over time. People may be moving because of house prices or the availability of sections or a lifestyle decision. More work is needed to understand the full implication of this within Greater Christchurch.
- Stats NZ natural increase assumptions. The Stats NZ projections also assume a natural increase based on fertility and life expectancy. These are also outlined in Section 7.4.1. These can change though less volatile than migration.
- Household formation. The Stats NZ projections also assume types of household formation (e.g., family, single person, couple). A change in approach or living arrangements will also change the number of people per household and the demand for dwellings.

5.2. Responding to Long Term Housing Demand

A key challenge over the next 30 years is where and how 168,720 people and 77,100 households are to be accommodated within Greater Christchurch, while delivering a well-functioning urban environment that better meets the needs of current and future generations[3]. This will require the development sector and property market to shift from the greenfield model that is primarily occurring on the outskirts of Christchurch City and in the townships of Selwyn and Waimakariri districts to substantially more intensification around centres and strategic transport corridors.

The advice received from the development sector engagement (in Section 7.2) and the locational preferences and trade-offs (in Section 7.3.4) establish that the key demand drivers are location, land availability, cost and condition, land use zoning and consenting certainty. These development sector drivers are manifesting in the ongoing demand for standalone housing typologies on greenfield land across Greater Christchurch, but particularly Selwyn and Waimakariri districts (refer to Section 7.3 and Figure 16). In addition to the demand drivers, development sector market feasibility analysis and financial risk management practices have a direct influence on the quality and amount of higher density housing that is being brought to the market. This is because supply needs to meet demand to make land development economically viable. Consequently, most developers need to achieve an investment on return within a tight timeframe, so there is an inherent need to respond to short-term demand by providing housing that aligns with market demand. The development of alternative housing typologies to meet medium- or long-term needs represent an investment risk.

Planning decisions can enable increases in housing density, infill and intensification (as an alternative to the greenfield model) by: (a) investing in 'placemaking' to uplift land value and improve local amenity and services; (b) improving regulatory and consenting processes to provide certainty and reduce compliance costs; (c) funding models to improve infrastructure and transport networks top enable mode shift and improve accessibility; and (d) initiating exemplar developments to demonstrate that real and

[3] As defined in NPS-UD Policy 1 well-functioning urban environments have or enable a variety of homes (to meet needs and enable Māori to express their cultural traditions and norms) and businesses, have good accessibility, support, and limit adverse impacts on the competitiveness of land and development markets, support reductions in greenhouse gas emissions and are resilient to the effects of climate change.

perceived risks can be reduced, while delivering a high quality product that is viable to develop. These initiatives can support a wider range of housing typologies across varying locations, while improving wellbeing and affordability across temporal scales.

The Greater Christchurch Spatial Plan will be a critical tool to correcting the current imbalance between what the development sector is delivering to meet short term market demand and what is required to better meet the medium- and long-term outcomes for a well-functioning urban environment as it is expressed in the NPS-UD. This is because it will provide direction on the long-term settlement pattern and decisions on critical changes to the transport network to enable a significant shift in travel modes. It will also include responses to natural hazard risk management and climate change and its implementation will be assisted through partnership arrangements with Mana Whenua, government agencies, the development sector and the community.

5.3. Responding to Decreasing Housing Affordability

Affordability issues are manifesting in Greater Christchurch (as illustrated in Section 7.3.1 and Table 20) as the gap between household incomes and the cost-of-living increases. The demand analysis (in Section 7.3.1) establishes that this is heavily influenced by Government fiscal policies, and to a lesser extent the release of land and increased consenting certainty that is influenced by Local Government. It also establishes that an aging population, falling home ownership rates, less secure employment, restricted access to welfare and the increasing cost of living are contributing to a significant increase in demand for affordable housing, including through social housing providers. This issue is highlighted by a 379% to 500% increase in the number of familiesbeing placed on the Public Housing Register across Greater Christchurch (refer to Section 7.3.2).

There is an opportunity for Kāinga Ora and other housing, infrastructure, and services providers to develop and regenerate locations that aren't as attractive to the land development sector due to lower land values, accessibility, neighbourhood character, public perceptions, or schooling options. This response will require partnerships and Government investment to increase the availability of social housing across Greater Christchurch. The Greater Christchurch Partnership also has a role to play by supporting social housing providers through the provision of new and improved infrastructure, transport networks, investing in 'placemaking', streamlining consenting pathways developing and implementing the Greater Christchurch Spatial Plan.

6. Capacity Analysis

This section identifies two key capacity and supply issues from Sections 7.5 and establishes what opportunities there are under the NPS-UD to improve affordability and deliver well-functioning urban environments across Greater Christchurch.

6.1. Key Assumptions

The following are the key assumptions located throughout the report when assessing demand:

- House values and prices. To assess long-term feasibility, assumptions around house values and sales prices are required. This assumes no changes to policy direction relating to borrowing or taxation.
- Land Use zonings. The potential yield is based on the enabled capacity within the related district plans. As these change, capacity will change.
- Densities. The level of growth expected is largely based on recent development. Large drastic changes (e.g., no standalone dwellings built) to what is built is not modelled. This is impacted by the cost of development and could be impacted by changes in the taxation or council or insurance costs.
- Reforms. The full impact of regulatory changes is yet to be realised. The assumption is that capacity matches the capacity proposed through each council's response to RMA-EHS. This will change through the process.

6.2. Regulatory Changes and Reforms

Significant changes in the regulatory framework through the enactment of the NPS-UD, NPS-HPL and RMA-EHS are influencing decisions on housing capacity. These national directions will assist to achieve longer term capacity outcomes by enabling urban consolidation through well-functioning urban environments, protecting highly productive land and responding to the effects of climate change. The NPS-UD provides a strong directive for planning decisions to be responsive to demand and to actively enable supply to promote competitive housing markets, support well-functioning urban environments and improve affordability. The NPS-HPL balances the enabling directions of the NPS-UD by prioritising the need to avoid the rezoning and development of highly productive land for urban activities. This includes requiring cost benefit analysis to be undertaken and for the viability of alternative methods to increase housing land supply to be evaluated.

There is uncertainty regarding whether the policy initiatives to give effect to the RMA-EHS will assist in delivering medium- and long-term housing needs i.e., 1- and 2-bedroom multi-level units rather than 2 to 3 storey town houses and 3-to-4-bedroom single level standalone homes (refer to Sections 7.4). The development sector engagement establishes that physical constraints, development costs (building up costs more) and land value (removing existing homes and conglomerating land is more economically viable where the value of the land is high) limit the viability of recently subdivided greenfield sections being intensified. The mandatory district plan changes required to give effect to the RMA-EHS will provide a pathway to enable existing residential and business properties within established centres and neighbourhoods to be infilled, intensified, and redeveloped. It is less clear what level of intensification may occur where, or to quantify the impact this may have on infrastructure, transport networks and the character of neighbourhoods across the sub-region.

As currently drafted, the Strategic Planning Bill places a stronger statutory weight on Regional Spatial Plans to achieve longer term outcomes and capacity needs within well-functioning urban environments. The Government has also signalled that the National Planning Framework will include environmental bottom lines, which may include baseline carbon emissions and minimum targeted reductions. This would provide an important basis for quantifying the impacts of different housing and business typologies to meet people's needs, the funding and provision of infrastructure (including investment in the transport network and public transport facilities), effects on the environment based on locational context and the influence property market trade-offs and preferences are having on intergenerational wellbeing. The recent weather cycle that contributed to significant rainfall events, and the devastating damage and loss of life caused by Cyclone Gabriel, across the North Island in the 2023, emphasised

the need for planning decisions to take appropriate account of natural hazard risk and the ongoing impacts climate change will have on the environments contained within the Greater Christchurch area.

The Greater Christchurch Spatial Plan, and the implementation actions associated with it, will play a critical role in providing plan enabled housing capacity across the sub-region and balancing this against other critical outcomes and bottom lines as the resource management system transitions from the RMA to the new regime.

6.3. Housing Supply and Responsiveness to Price and Interest Rates

Elements of the property sector respond to prices and other monetary changes differently. It is important to understand how the centralised management of the Aotearoa economy influences capacity and affordability in Greater Christchurch's housing market. The Reserve Bank released analytical notes[4] on how housing supply reacts to prices and monetary policy that listed the following key findings:

- Longer term financing costs, largely driven by long-term projected interest rates, are the key factor in house prices. These factors are influenced by global factors rather than domestic factors such as monetary policy. The impact of the longer-term financing costs are amplified when housing supply is less responsive to prices.
- Investment in housing has been driven by high returns that have been realised over the past 20 years, which has been underpinned by the ability to leverage capital and favourable taxation provisions. The Reserve Bank are expecting a correction in house prices in the future.
- House prices respond differently to changes in interest rates depending on the area. The Reserve Bank have identified variation in how territorial authorities have responded to housing supply. In general, they identify that areas where house prices have grown proportionately faster than housing supply are less responsive, and these areas are more susceptible to changes in interest rates. The Reserve Bank analysis indicates that the Selwyn and Waimakariri housing market has been less responsive than Christchurch City. However, this could suggest the impact of other factors not considered within the Reserve Bank analysis, such as the influence of the Canterbury Earthquakes, buyer preference, land availability and local property sector market feasibility and financial risk management practices.

An example of where the Reserve Bank has applied an economic lever was the recent increase in its benchmark interest rate to address increasing inflation. This response had a direct influence on bank loan interest rates, property values and loan deposit requirements that are contributing to a less buoyant housing market, which is evidenced by reduced building consent numbers and increases in the cost of living. Planning decisions have a lesser influence on how the 'boom' and 'bust' nature of the property sector plays out over time in comparison to government interventions, global externalities, and market changes. The Greater Christchurch Partnership can assist in reducing undersupply to alleviate pressure on the housing sector by ensuring that there are clear consenting pathways to assist plan enabled, and infrastructure ready land, that has been identified to meet demand to be developed within a timely manner to reduce residual costs. These actions are particularly important where there is increased cost of living and affordability pressures affecting society.

[4] https://www.rbnz.govt.nz/research/our-research-and-analysis/analytical-notes

7. Background Work

7.1. Study Area

The study area is the extent of the Christchurch, Selwyn, and Waimakariri territorial authority boundaries. This has been expanded beyond the Greater Christchurch boundaries for this HCA on the grounds that:

a. the areas of the three TAs outside of the Greater Christchurch boundary still require strategic planning and the TAs will have to do this work at some point;
b. the indicative national legislation change is leading towards regional spatial plans and an expansion is a step towards a regional plan[5]; whilst still being achievable in the timeframe;
c. expanding the scope recognises the inter-relationship of the housing market[6]; and
d. travel time data from Stats NZ shows areas around Greater Christchurch (especially Darfield and Leeston) are operating as part of the wider functional urban area, (see classifications of a Stats NZ has Functional Urban Area Classification where at least 40% of workers commute to urban areas[7] and Urban Accessibility Classification showing what areas have access to larger urban areas[8]).

Figure 1: Greater Christchurch boundary for the 2021 Housing Capacity Assessment



[5] https://environment.govt.nz/what-government-is-doing/key-initiatives/resource-management-system-reform/r/

[6] https://www.motu.nz/assets/Documents/our-work/urban-and-regional/housing/Single-Housing-Market.pdf

[7] https://statsmaps.cloud.eaglegis.co.nz/portal/apps/Minimalist/index.html?appid=7bad0be7cfe949388f71cbc90b8916 ca

[8] https://www.stats.govt.nz/methods/urban-accessibility-methodology-and-classification

7.2. Engagement

Policy 10 of the NPS-UD requires engagement with the development sector to identify significant opportunities for urban development. Implementation 3.21 states that councils must seek information and comment from (a) expert or experienced people in the development sector, and (c) anyone else who has information that may materially affect the calculation of the development capacity. The partner councils identified parties most actively involved in the development sector and significant landowners (e.g., that could develop over 20 or more dwellings) and asked these parties to undertake a market demand and intentions survey. Forty one developers, landowners and some involved in the real estate sector completed an online survey in late June/early July 2021. They responded to questions about their views on the demand and supply of land for residential and business development within the Greater Christchurch area, supply issues or barriers to development, and development intentions and possible timing for these. The low response rate to the survey means it is difficult to draw informed conclusions, however, there are some clear, common views expressed across the survey that reflect some elements of the development sector's interests and opinions. A more detailed summary and analysis of the responses is provided in a separate supporting report.

Residential development

- Key factors that drive residential developers' interest in development are demand for residential new builds, location (e.g. proximity to transport), the availability, cost and condition of land and zoning, and predictability of consenting processes.
- A wide range of areas were signalled of interest to respondents, across all three territorial authorities.
- Developers prefer to build standalone single and two storey dwellings, single and two storey multi-unit complexes, with smaller interest in other housing types. These preferences are driven primarily by high market demand.
- Key attributes that residential buyers look for in a property are house design (2-3 (or 4) bedrooms and layout), lifestyle factors (near the beach or park), streetscape, neighbourhood character and school zoning, section size and landscaping. Internal garage and other off-road parking, privacy and orientation to the sun, ease of heating and freehold title appeal.

Smaller homes and higher density living

- Developers anticipate increased demand for smaller-sized dwellings, and in single storey, easily accessible and elderly persons' housing. They expressed interest in higher density developments, preferring 3-4 storeys rather than higher. Financing higher density developments is an issue, along with consenting.
- Privacy, private outdoor space, natural light and house design, including internal garage are key considerations people look for in higher density developments. Lack of these features deter buyers, along with developments that are too high or seem crowded.

Greenfield development

- Developers reported having greenfield development underway or intending to start within the next 1-3 or 4-10 years. A small number said they intended selling within the next decade; only one indicated they did not intend doing anything with their greenfield land.
- Solid staging of greenfield residential developments is occurring at most phases of development over the next three years (from stage 1 – stage 5 developments).
- Difficulties with restrictive or complicated District Plan rules and regulatory processes were cited as barriers to development of greenfield land, with some mention also of infrastructure capacity and timing issues and difficulties developing some land.
- Standalone detached, single storey dwellings are the preferred housing type by developers as this is where they consider the market demand lies.
- A few respondents commented on the extent to which respective district plans enable greenfield development and made suggestions for how councils could better support it.

Other comments and responses

- A very small number of respondents were from the real estate sector – their views mirrored those of land owners and developers.
- Several respondents provided additional final comments on their perspectives of the overall development sector and issues they have experienced.

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In addition to the survey, Christchurch City Council held interviews with the most prominent multi-unit developers. Two main questions asked were:

- Why are you choosing to develop in the areas you currently do and with your current typologies and;
- If the District Plan was not an impediment, where would you choose to develop, what would you like to build and why?

Whilst there were varied responses largely in response to their current development models, some consistent feedback included:

- Preferred location to develop was the central city and inner city suburbs and any area with good street appeal and close proximity to amenities.
- St Albans, Edgeware, Spreydon, Papanui, Riccarton, Waltham, University surrounds, Merivale were the most commonly cited preferred areas to develop.
- Existing (large site sizes) were important as they enabled redevelopment without site amalgamation.
- The RMD zone (and zone provisions) were the most favoured locations by developers, in preference to the RSDT zone.
- Areas not seen as so desirable to develop, despite plan enablement were Hornby and Linwood.

In regard to housing typologies:

- Two to three storey townhouses remained the preferred typology, due to strong market demand and next comparative offer to the three-bedroom detached dwelling that can be acquired in suburban and greenfield developments for a similar price.
- General consensus was that the local market was not ready for apartment typologies due to lower land prices, the additional development costs of 4+ stories and low buyer demand.
- Buyers still demand private amenity space, freehold title and car parking spaces (other than for the investor client (where it was not so important)).

Also, Selwyn District Council met with developers throughout the district in early 2023. Their feedback was:

- There is a strong demand for stand-alone typologies, with a general trend to smaller sections and smaller dwelling footprints.
- General support for spatial plans to indicate the direction of further greenfield expansion.
- The scale of greenfield allows for greater outcomes and flexibility than brownfield.
- Disagreement on whether brownfield development in Selwyn will be an attractive option for developers or at least disagreement when in the future it could be.
- A larger number of developers are needed so that there is sufficient competition which can drive affordability.
- General agreement that the rezoning and consenting process is too slow, cumbersome, and drawn-out.
- There is a growing demand for retirement or lifestyle villages, which represents housing choice and a general trend observed of wanting to live closer to family since 2019.

The Waimakariri District Council also met with local developers in Early 2023. The feedback received was similar to as described above for Selwyn District Council. Additional points included the following:

- Neighbourhood centres are also important for local convenience and well-functioning urban environments (e.g. Arlington and Lilybrook local centres). Greenfield developments should include neighbourhood centres.
- Discovering that as they develop small sections and smaller street widths, on street parking is becoming problematic with larger vehicles, rubbish trucks, emergency vehicle etc having difficulty getting through. To date, public transport routes are not keeping pace with development and therefore making new neighbourhoods car dependant.
- More intensive development around PT/MRT routes could be attractive, but require certainty that this will happen.

7.3. Housing Market Factors

Section 3.23 of the NPS-UD seeks information regarding market indicators and how planning and infrastructure decisions impact affordability for different community groups. There is also a need for a specific focus on Māori housing demand. This section will provide analysis of house prices and tenure, affordability, social housing, Māori housing, locational preferences, national and international trends, migrant demand, household crowding, and demand for visitor accommodation.

7.3.1. Monitoring

The following information is available on the MHUD Urban Development dashboard[9]. The dashboard contains information around supply, prices, rents, volume, and land value as a ratio of capital value, however some of the information hasn't been updated in a few years.

Prices

This figure shows the 12-month rolling sales price. This does not consider size or quality of dwelling and is not adjusted for inflation. There is a steep increase over the last two years after around 5 years of almost stable pricing. The increase is seen across the country and reflects broader trends in monetary policy (low interest rates), and increased demand.

Figure 2: Dwelling Sales Price from MHUD Dashboard

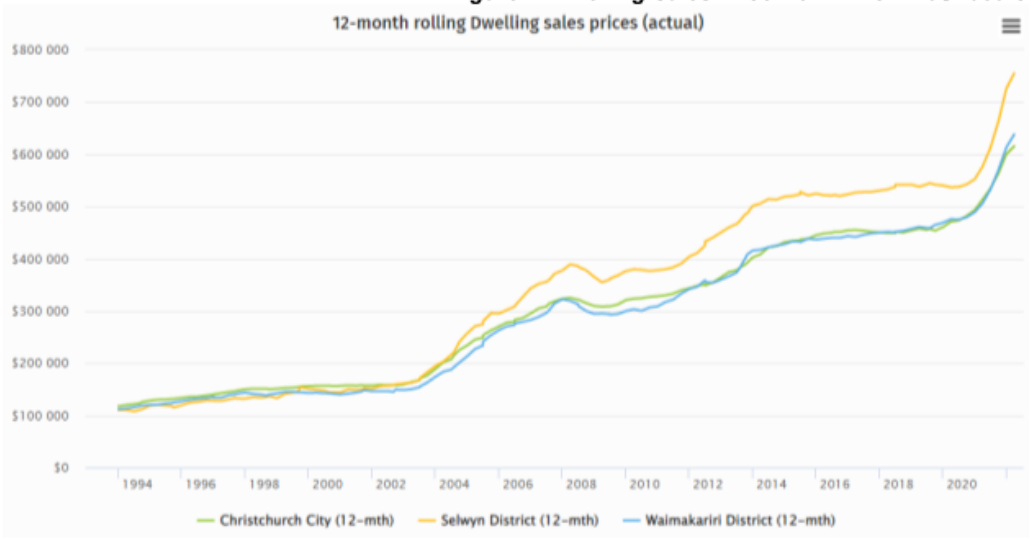


Table 4: Dwelling Sales Price Comparison

TA	31st Dec 2015	31st Dec 2020	31st Dec 2022	Change from 2015 to 2020	Change from 2020 to 2022
Waimakariri	437,500	490,500	723,250	53,000 (11%)	232,750 (32%)
Christchurch	441,250	494,650	672,000	53,400 (11%)	177,350 (27%)
Selwyn	523,500	552,250	818,250	28,750 (5%)	266,000 (33%)
Auckland	725,900	914,000	1,107,000	188,100 (21%)	193,000 (17%)

The table above shows the change in house sales price for the 3 TAs compared to Auckland. The increase in house prices between 2015 and 2020 was relatively stable for the 3 TAs (between 5% and 10%) compared to 21% in Auckland. The increase last two years for the 3 TAs was significant (between 27% and 33%) when compared to the combined growth of the previous years and is slightly higher than Auckland's % increase. This could suggest the relative value of the 3 TAs is attracting more demand.

[9] https://huddashboards.shinyapps.io/urban-development/

Rents

This figure shows the 12-month rolling rent for the three TAs. Between 2015 and 2020 rents dropped in Christchurch and Selwyn but rose in Waimakariri. This is probably because of higher rents through to 2015 following the Earthquakes with homes being repaired and residents needing short-term accommodation and then stabilised. In that same timeframe, Auckland's rent rose. Between 2020 and 2022, rents are rising fairly consistently across the country.

Figure 3: Dwelling Weekly Rents from MHUD Dashboard

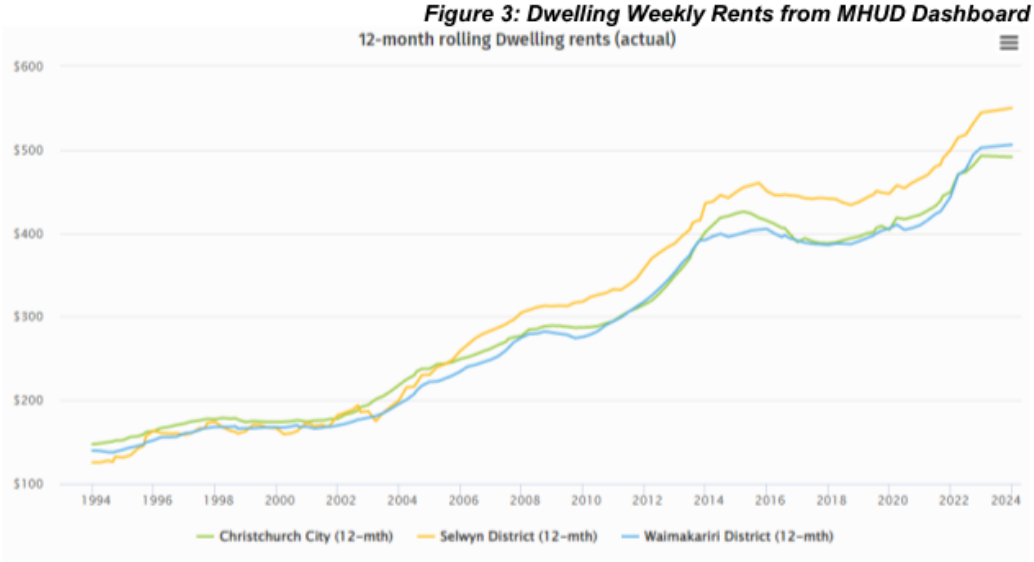


Table 5: Dwelling Weekly Rents Comparison

TA	31st Dec 2015	31st Dec 2020	31st Dec 2022	Change from 2015 to 2020	Change from 2020 to 2022
Waimakariri	405	410	503	5 (1%)	93 (18%)
Christchurch	415	422	493	7 (2%)	71 (14%)
Selwyn	451	465	545	14 (3%)	80 (15%)
Auckland	485	575	602	90 (16%)	27 (4%)

The table above shows a similar story as house prices. Rents between 2015 and 2020 ranged from increasing by 1% to 3% compared to a 16% increase in Auckland. This could be because of higher rents in 2015 from earthquake repair demand and stable house prices. The change from 2020 to 2022 is similar across the 3 Tas with Auckland being lower.

Dwellings Sold

This figure shows the 12-month rolling total of dwellings sold in the 3 TAs. This includes all dwellings sold, irrespective of whether this is growth related or not. This number is helpful in showing turnover and broad demand in the housing market. It shows a fairly consistent number of dwellings sold.

Figure 4: Total Dwellings Sold from MHUD Dashboard

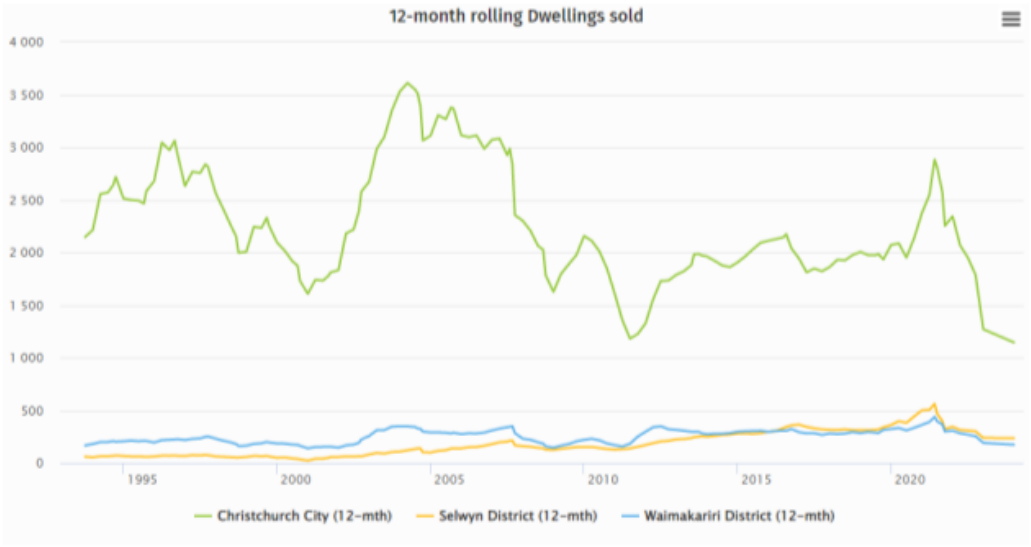


Table 6: Total Dwelling Sold Comparison

TA	31st Dec 2015	31st Dec 2020	31st Dec 2022	Change from 2015 to 2020	Change from 2020 to 2022
Waimakariri	294	361	190	67 (19%)	-171 (-90%)
Christchurch	2,111	2,373	1,270	262 (11%)	-1,103 (-87%)
Selwyn	294	499	237	205 (41%)	-262 (-111%)
Auckland	8,882	8,283	3,283	-599 (-7%)	-5,000 (-152%)

Growth in total sales had been rising within Waimakariri, Christchurch, and Selwyn, with especially Selwyn seeing high levels from 2015 to 2020. In the past two years sales are down across the country potentially reflecting the government changes to restrict investment property speculation and signalled increasing interest rates.

Dwelling Growth

This figure shows dwelling consents and household growth, noting that typically growth will be higher as one building consent may include multiple dwellings (the case in particular for Christchurch City). Dwelling consents showing total number of dwellings whereas household growth takes into account replacement of dwellings. There is a large dip in household growth between the years 2010 and 2012 for Christchurch City as dwellings were demolished following the earthquakes.

Figure 5: New Dwelling Consents and Household Growth from MHUD Dashboard

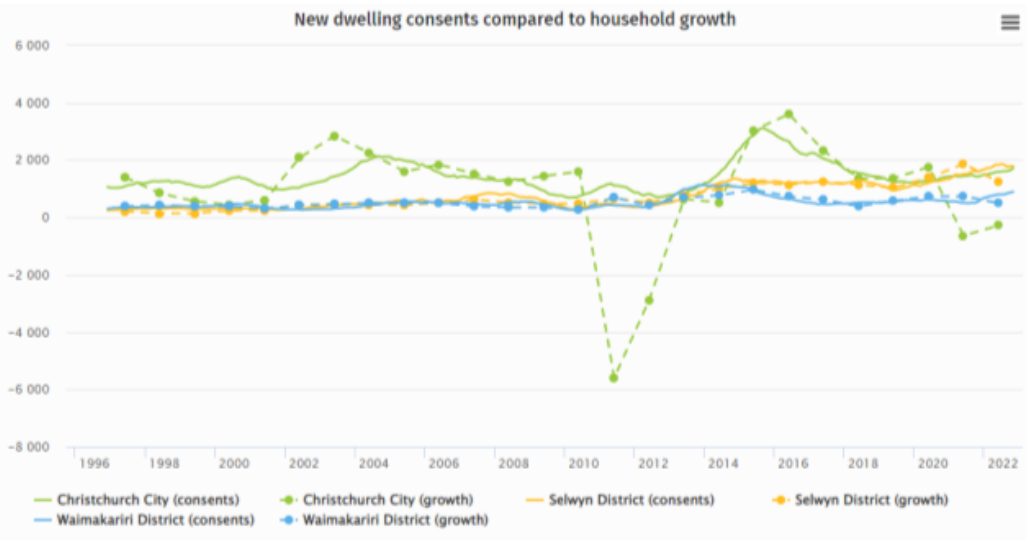


Table 7: New Dwelling Consents and Household Growth Comparison

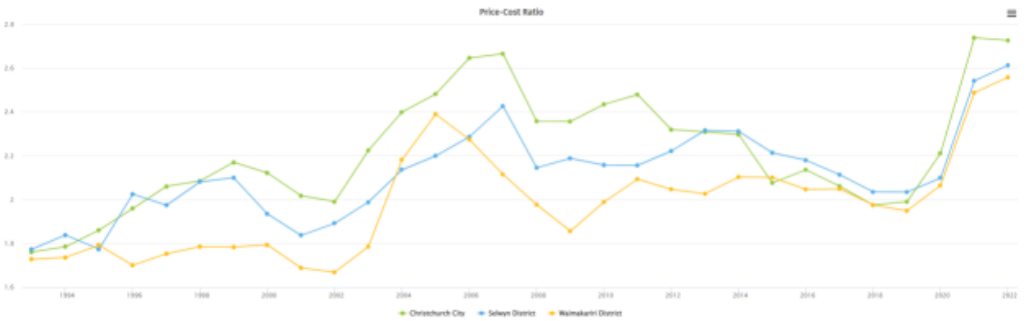
TA	30th June 2015		30th June 2020		30th June 2022		Change from 2015 to 2020		Change from 2020 to 2022	
	Consents	Growth	Consents	Growth	Consents	Growth	Consents	Growth	Consents	Growth
Waimakariri	924	962	616	731	551	615	-308	-231	-65	-116
Christchurch	2,858	3,040	1,259	1,760	1,586	-280	-1,599	-1,280	327	-2,040
Selwyn	1,243	1,207	1,196	1,379	1,726	1,345	-47	172	530	-34
Auckland	4,561	10,800	6,710	10,967	6,829	-2,967	2,149	167	119	-13,934

The table shows that consents and growth has slowed substantially from 2015 to 2020 for Waimakariri and Christchurch with Selwyn holding fairly steady. However, during that period Auckland has seen a large increase in consents though it doesn't correspond to household growth. The change from 2020 to 2022 shows a drop in household growth but a continued positive consent growth in all areas except Waimakariri. This could suggest a level of consenting to cover previous years of under supply or an over-supply as a response to higher dwelling prices.

Housing Price to Cost Ratio

The figure shows the difference between the price paid for a dwelling (house and land) compared to the construction costs (and associated fees). For example, if the land is 1/3 of the house price, the ratio is 1.5. The data shows that the recent increase in prices is largely an increase in land prices, as the ratio has increased.

Figure 6: Housing Price to Cost Ratio



Price Efficiency

This was previously provided by Ministry for the Environment through their dashboard and is now run by Ministry of Housing and Urban Development. This data has been removed.

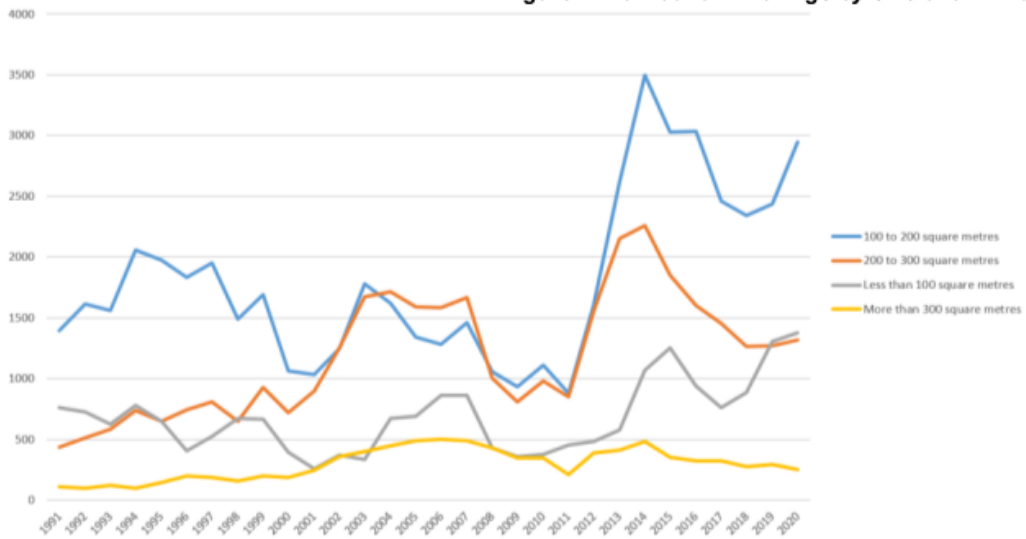
Price Discontinuity

This was previously provided by Ministry for the Environment through their dashboard and is now run by Ministry of Housing and Urban Development. This data has been removed.

House Size

The following figure shows the size of all dwellings consented over time. This is from Stats NZ and is for the Canterbury region only[10]. This shows some recent trends of a lot more 100m^2 – 200m^2 dwellings generally being built. It also shows that in the last few years more dwellings smaller than 100m2 has exceeded dwellings 200m^2 – 300m^2, which last occurred more than 20 years ago.

Figure 7: Number of Dwellings by Size over Time

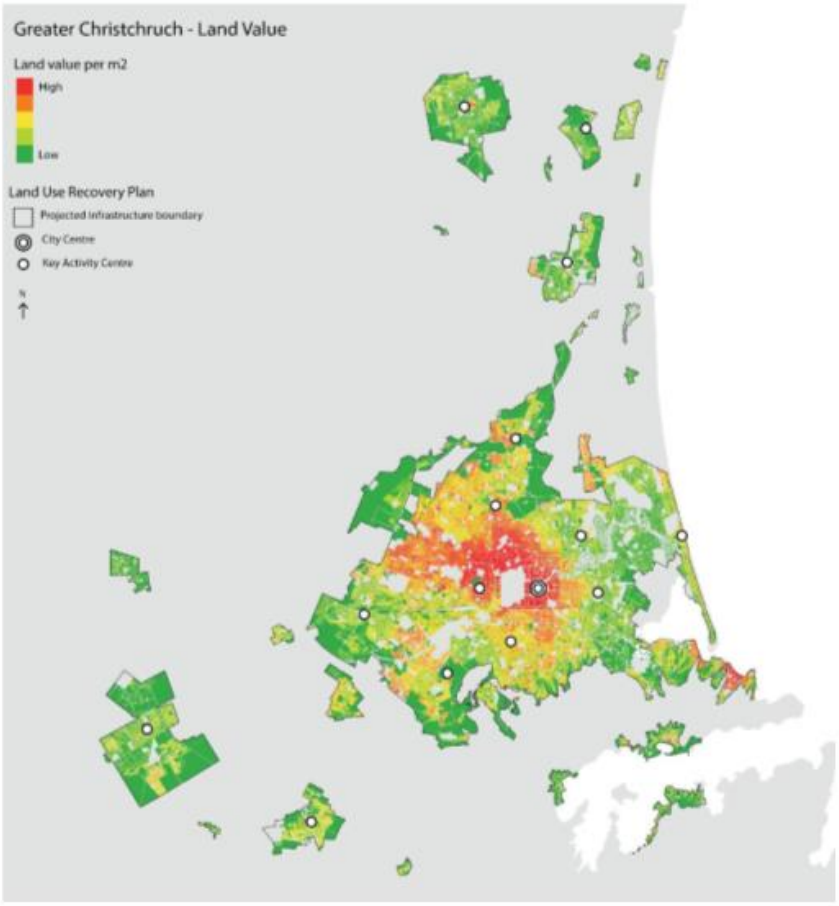


Land Values

Land Values can be a measure of desirability, in which you see higher densities closer to city centres. Land Values are often updated three-yearly and so analysis can focus on areas within Greater Christchurch that have higher land values suggesting a higher level of desirability and potentially better feasibility for increasing density. The following figure shows the expected picture of higher land values around the centre that dissipates out.

Figure 8: Land Values

[10] https://www.stats.govt.nz/news/consents-for-medium-sized-houses-increase-rapidly-in-the-last-decade



Accessibility

The diagrams below show the proportion of population living within travel threshold of 30 mins by walking, cycling, driving or 45 mins by public transport to employment opportunities in the morning peak. With the blue and green areas showing residents of these locations are able to access 60% or more jobs available at time of record within 30 mins of walking, cycling, driving or 45 mins using public transport, and the red and orange areas are able to access 20% or less.

This set of diagrams was last modified in November 2019, utilising Open Street Map road for walking, cycling and public transport, datasets from GTFS feeds of public transport, meshblock employment (States NZ) and drive time from TomTom.

Figure 9: Access to job using PT

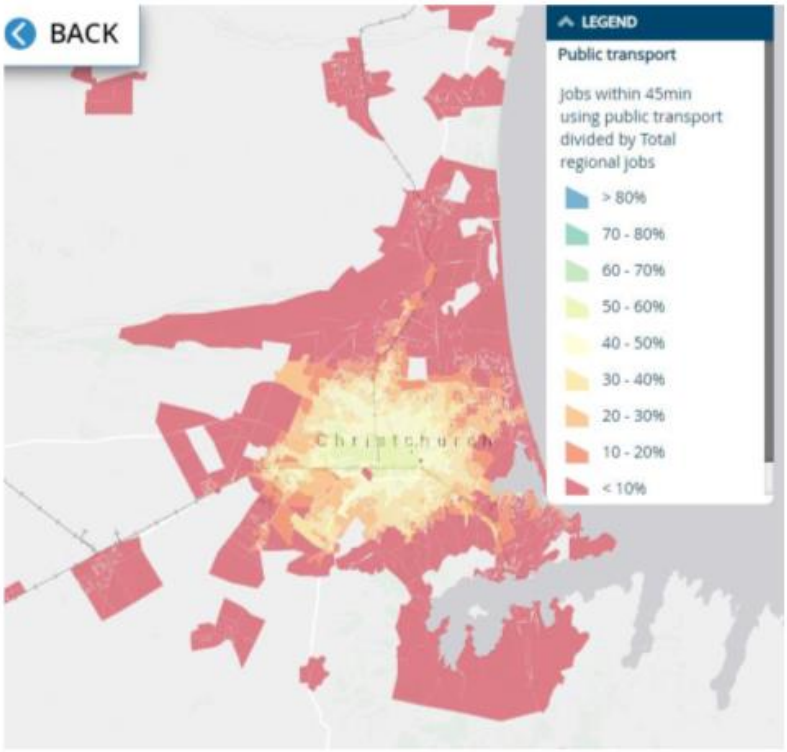


Figure 10: Access to job using vehicle

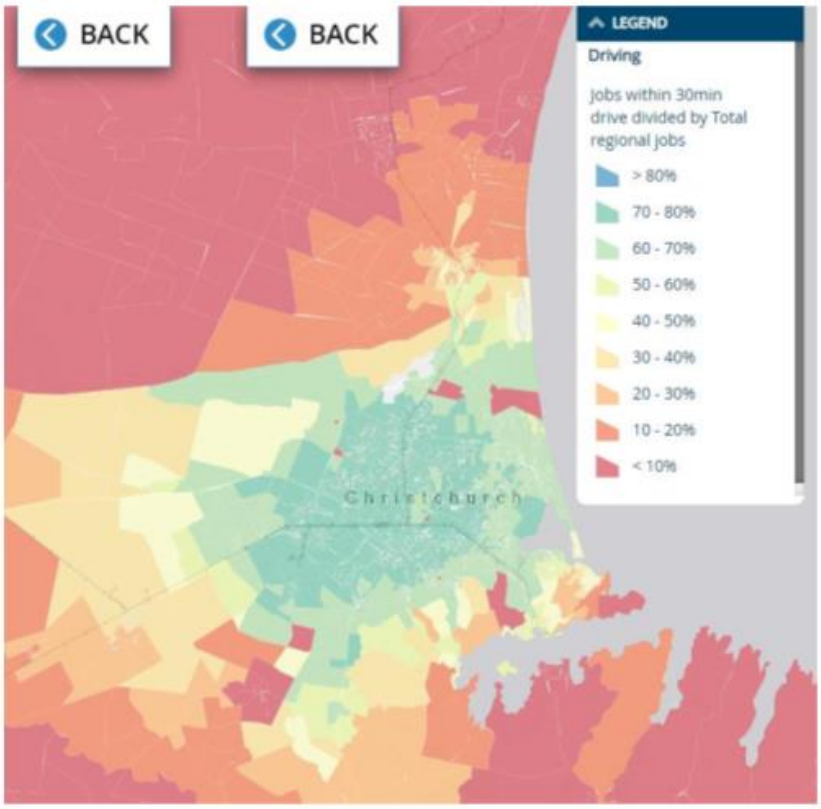


Figure 11: Access to job walking

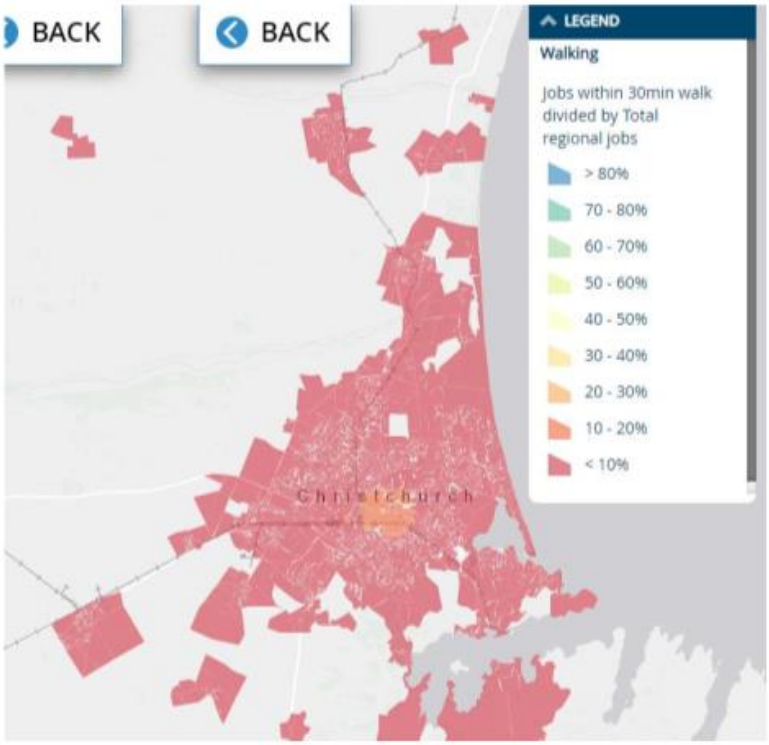
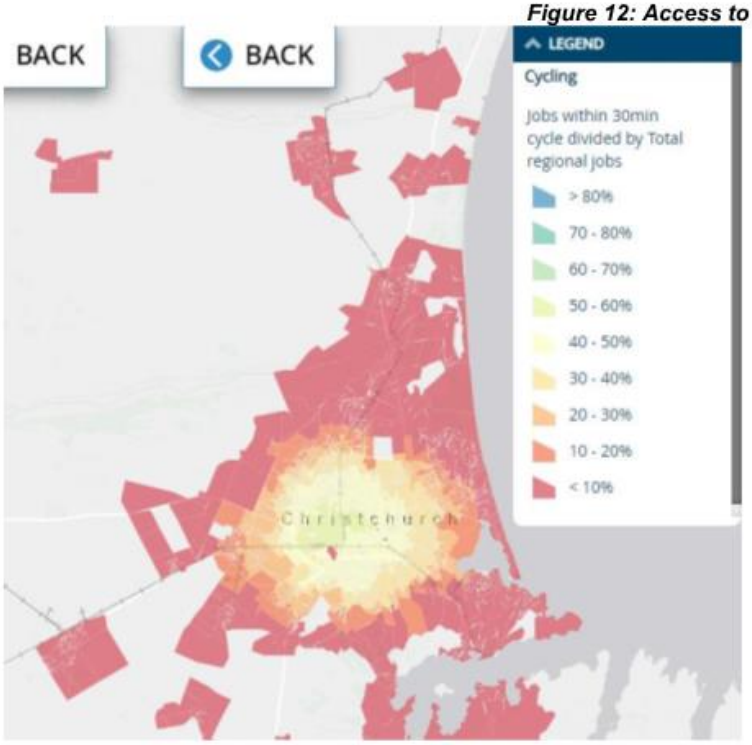


Figure 12: Access to jobs cycling

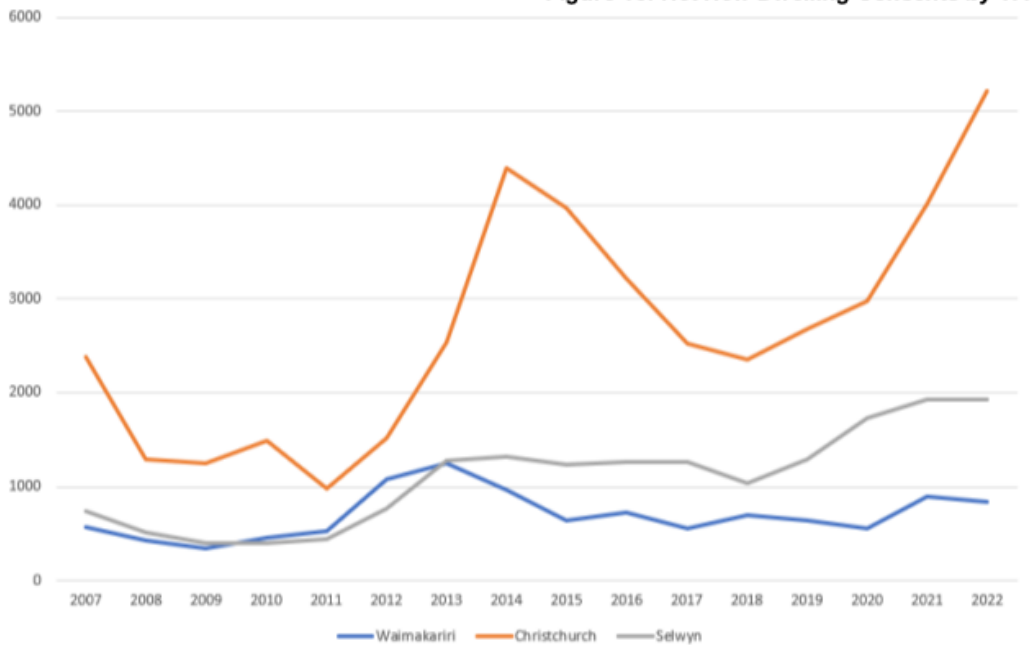


Location of Growth

25

The figures below show the net new dwelling counts, as monitored by the respective TAs, from 2007 to 2013. The detailed table of take-up rates can be found in Section 7.5.6. Generally, all TA's are seeing higher levels of consents than pre 2011 (pre earthquakes). SDC and CCC are seeing record levels of consents in 2020.

Figure 13: Net New Dwelling Consents by TA

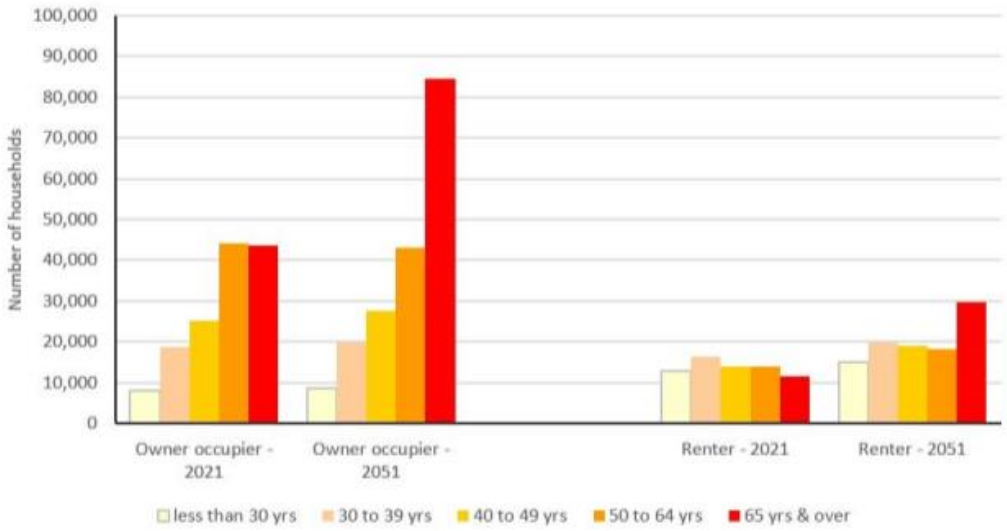


Home Ownership

The level of owner occupation like the rest of the country has declined and this trend is expected to continue, particularly in younger age groups. Ownership rates in Christchurch are projected to slowly drop below 60% in 2051, whereas for Selwyn and Waimakariri, ownership drops from around 80% to nearer 75%. Conversely the number of renter households will rise.

The figure below shows the change in proportion of age group and whether they own or rent. The key points are that the ageing demographic is driving a lot of demand, especially for owner occupier, whereas rental demand is rising for all demographics.

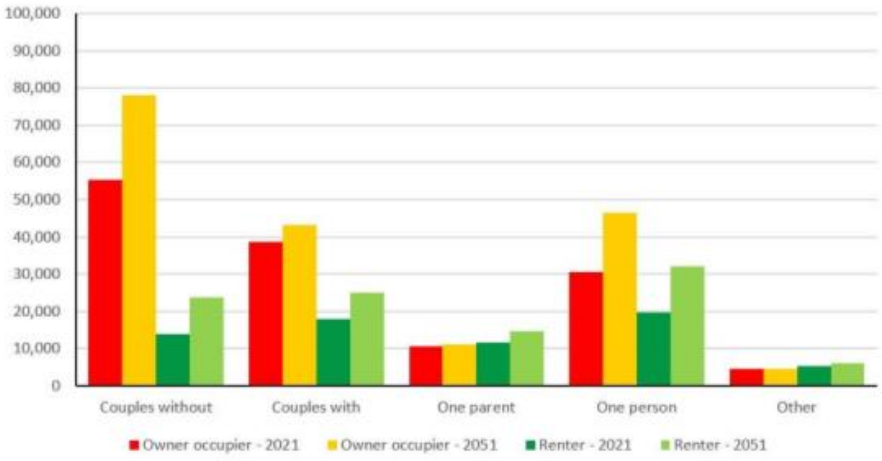
Figure 14: Change in Households by Tenure and Age Group



There is a similar trend in household composition, with large growth in one person households and 'couples without children' households, for both ownership and rental. In terms of housing typology, Greater Christchurch's aging population leads to significant growth in the number of one person and couple only households, resulting in a significant increase in the demand for smaller and multi-unit dwellings. Demand for additional social housing dwellings per annum will be required if the current ratio of social renter dwelling to total housing need is maintained. Standalone dwellings account for 66% of the projected growth from owner occupiers and 56% of the renter household growth. Demand for standalone dwellings is predominately for units with three or more bedrooms. Multi-unit demand is typically for units with fewer bedrooms. Renters have a higher propensity to rent multi-unit dwellings relative to standalone dwellings, however this may be influenced by other factors such as lower rents and proximity to central city.

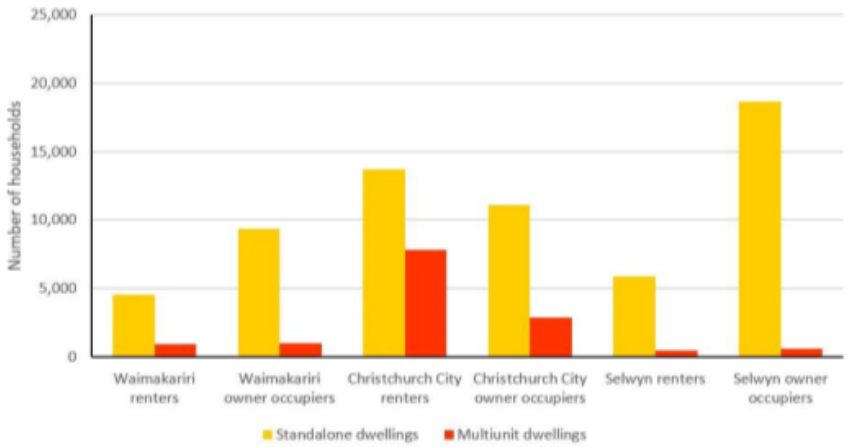
Results from national and international studies indicate that residents give priority to the number of bedrooms when choosing a dwelling. The number of bedrooms required depends on the size of the household. There is currently a gap in information regarding the relationship and trade-offs between the size of the dwelling and the typology, made by different household groups.

Figure 15: Change in Households by Tenure and Composition



The following figure shows where typology demand is likely to occur. Rental and multi-unit demand is largely occurring within Christchurch city. Historically, there is low levels of multi-unit development in Selwyn and Waimakariri that means low levels of projected demand.

Figure 16: Demand by typology and tenure



Housing Affordability

Market rents increased marginally faster than household incomes between 1991 and 2020. However, Selwyn District house prices increased 3.4 times faster than median household incomes between 1991 and 2020. Similar trends occurred in Waimakariri District (house prices increased 2.2 times faster than median household incomes) and Christchurch (house prices increased 2.7 times faster than median household incomes). The faster growth in house prices relative to household incomes has continued to place pressure on housing affordability for first home buyers.

Table 8: Rents, House Prices and Income over Time[11]

[11] From Livingston Report

	Waimakariri District			Christchurch City			Selwyn District		
	Median rent	Lower Quartile HP	Median household income	Median rent	Lower Quartile HP	Median household income	Median rent	Lower Quartile HP	Median household income
1991	$146	$80,000	$31,100	$147	$68,000	$31,100	$134	$61,000	$35,500
1996	$157	$95,000	$34,700	$171	$115,000	$32,900	$164	$90,000	$39,100
2001	$181	$110,500	$39,700	$171	$126,800	$36,500	$168	$104,000	$47,200
2006	$246	$240,000	$50,900	$244	$253,000	$48,200	$266	$266,000	$62,500
2013	$394	$325,000	$68,800	$356	$336,000	$65,300	$435	$399,500	$85,100
2018	$381	$380,000	$81,700	$345	$344,500	$77,600	$406	$481,500	$101,100
2019	$400	$385,000	$84,600	$345	$345,000	$80,300	$432	$457,750	$104,600
2020	$420	$402,000	$87,600	$400	$380,000	$83,100	$468	$487,000	$109,200
2021 Est	$460	$435,000	$90,700	$420	$431,000	$86,000	$500	$540,000	$113,000
Change									
91 to 96	8%	19%	12%	16%	69%	6%	22%	48%	10%
96 to 01	15%	16%	14%	0%	10%	11%	2%	16%	21%
01 to 06	36%	117%	28%	43%	100%	32%	58%	156%	32%
06 to 13	60%	35%	35%	46%	33%	35%	64%	50%	36%
13 to 18	-3%	17%	19%	-3%	3%	19%	-7%	21%	19%
18 to 19	5%	1%	4%	0%	0%	3%	6%	-5%	3%
19 to 20	5%	4%	4%	16%	10%	3%	8%	6%	4%
91 to 20	188%	403%	182%	171%	459%	167%	248%	698%	208%

Source: HUD, MBIE, Headway Systems, Corelogic and Statistics New Zealand

The proportion of median household income in Selwyn District required to pay the median market rent has fluctuated between 19% and 27%. The peak of 27% occurred after the 2010/2011 earthquakes and coincides with a significant housing shortage in Greater Christchurch. Subsequently, these pressures have eased and rents as a proportion of household incomes have fallen back to 22% in 2020. The proportion of median household income required to service a mortgage (assuming a dwelling is purchased at the lower quartile house sale price with a 10% deposit) has varied between 19% and 40% between 1991 and 2020. The peak (40% of household income) coincided with a peak in mortgage interest rates in the mid-2000s. Historic lows in mortgage interest rates have offset the growth in house prices at this stage of the housing market cycle.

Affordability is the relationship between house prices and income. Factors that influence house prices and income are more national fiscal policies rather than local government. Lowering of interest rates and Loan to Value Ratio's lead to the ability for more people to borrow and subsequently drive house prices up. The release of new land for development will assist the market overall and if associated costs, such as infrastructure, can be minimised then this can reduce pressures on rising house prices, however, fiscal policies will influence prices more. Planning decisions should seek the efficient use of infrastructure to limit costs.

Recent work by Greater Christchurch[12] builds on this analysis. This tested different urban forms as to what achieves better affordability. The result shows that urban form is less of a factor and household income and cost of development continue to drive affordability issues.

7.3.2. Housing Need

Demographic, tenure, employment and welfare trends, i.e. the 'perfect storm' of an ageing population, falling home ownership, less secure employment, and restricted access to welfare, are drivers for the current and projected increase in demand for social housing. The Salvation Army released a report in

[12] Greater Christchurch Spatial Plan Dwelling Affordability Assessment 2022

August 2017 analysing the future need for social housing in New Zealand[13]. The report states that current capacity of Social Housing in New Zealand is 'just over 82,000' units, with the majority owned by Housing New Zealand (62,500 units). In March 2020, the Greater Christchurch Partnership commissioned Community Housing Aotearoa to provide advice and recommendations to collaboratively develop an action plan to enable social and affordable housing provision across Greater Christchurch. The *Social and Affordable Housing Action Plan Report*[14] identified a current supply of 9,768 social and affordable homes (local authority and third sector owned homes) as at 30 June 2020. The spatial distribution of social and affordable housing is uneven across the three Councils and almost entirely concentrated in Christchurch (95%) as shown in the table below.

Table 9: Current Social and Affordable Housing Supply in Greater Christchurch[14]

	Public Housing	Transitional Housing	Assisted Rental	Progressive Home Ownership	Total
Waimakariri	174	0	117	0	291
Christchurch	7,168	335	1,896	51	9,450
Selwyn	13	0	14	0	27
Total	7,355	335	1,690	51	9,768

An indication of future supply was also gained through interviews with providers and other work Community Housing Aotearoa has completed to identify projects in their development pipelines for potential COVID-19 recovery funding. The interviews identified 125 new units under construction in Christchurch, but none underway in Waimakariri or Selwyn. Fourteen future projects, providing 428 new affordable homes, were identified, mainly located in Christchurch.

In addition to community housing providers, Kāinga Ora's current construction intentions across Greater Christchurch indicates a commitment to public and supported homes to be delivered between 2021 and 2024. As at July 2021, Kāinga Ora has 330 homes currently under construction, 250 are currently at pre construction phase and a further 740 homes are in planning.

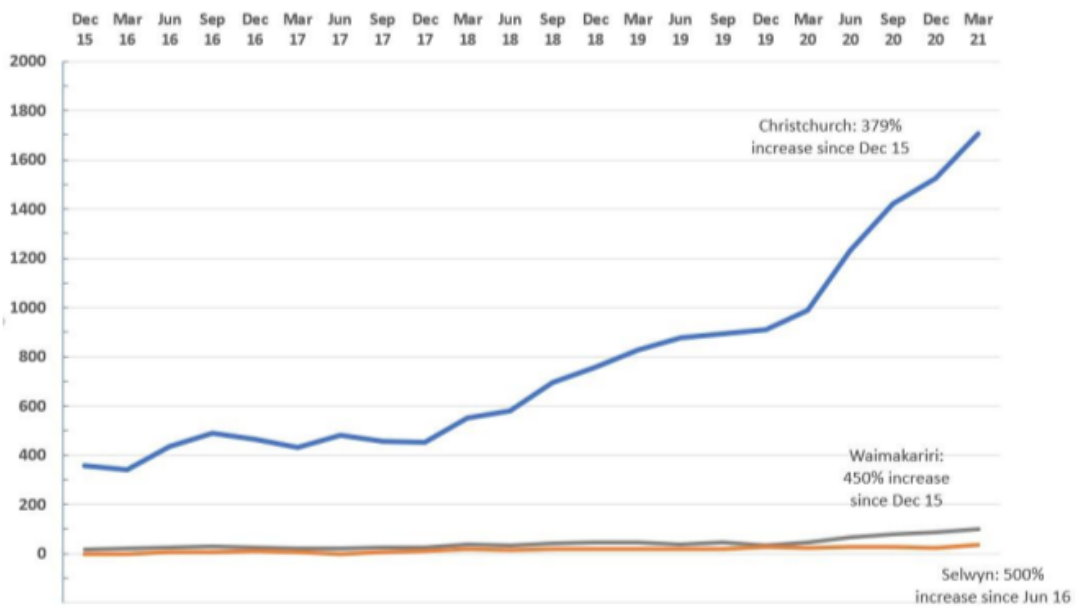
The Livingston and Associates report also analyses the changes in affordability across Greater Christchurch. The data shows that the rate of increase in house prices and rents has outpaced increases in household incomes. The result is a declining rate of home ownership and an increasing rate of housing stress amongst renter households.

The impact of these trends is most pronounced on lower income households. One indicator of how the lowest income households are faring is the Public Housing Register. This register is maintained by the Ministry of Social Development to prioritise placement of eligible households into public housing supported by the Income Related Rent subsidy. The chart below shows the number of households on the Register since March 2015. While Christchurch has the largest number on the register, Selwyn has experienced the highest growth (500%), then Waimakariri (450%) and Christchurch (379%).

Figure 17: Ministry of Social Development, Public Housing Register 2015 – 2021

[13] Johnson, Alan (2017); *Taking Stock, the demand for Social Housing in New Zealand*; www.salvationarmy.org.nz/TakingStock

[14] Community Housing Aotearoa (September 2020), Greater Christchurch Partnership Social and Affordable Housing Action Plan Report.



The table below shows the number of applicants on the Housing Register as at March 2021, within Priority A and Priority B groups. Priority A refers to applicants who are considered at risk and includes households with a severe and persistent housing need that must be addressed immediately. Priority B refers to applicants who have a serious housing need and includes households with a significant and persistent need.

Table 10: Housing Register, by TA and Priority[15]

TA	Housing Priority		Total
	A	B	
Waimakariri	90	9	99
Christchurch	1,566	141	1,707
Selwyn	36	3	39

Table 11: Housing Register, by TA and bedrooms required – March 2021

TA	Bedrooms Required					
	1	2	3	4	5+	Total
Waimakariri	60	24	12	3	0	99
Christchurch	1,113	339	138	42	15	1,707
Selwyn	24	12	0	0	0	36

The table above illustrates that most households require smaller, one or two bedroom homes. The available data does not provide a breakdown of bedroom requirements by Priority A or Priority B groups. The analysis by Community Housing Aotearoa concluded that, viewed together, data demonstrates a continuing lack of sufficient social and affordable housing supply. Public Housing Register has increased significantly in both percentage and total numbers of households. In addition, the need for Emergency Housing Special Needs Grants was rising prior to COVID-19 and has increased rapidly

[15] Community Housing Aotearoa (September 2020), Greater Christchurch Partnership Social and Affordable Housing Action Plan Report.

since March 2020 (from $1,593,966 in March 2020 to $3,172,929 in June 2020)[16]. Demand is expected to further increase as the economic impacts of the pandemic start to bite.

Total *'renter housing need'* is assessed by encapsulating those financially stressed private renter households, together with those who are homeless or living in crowded dwellings, with those whose housing requirements are met by social, third sector and emergency housing providers. The relative level of housing need is expected to increase across Greater Christchurch, but it will be significantly greater in Christchurch City. This is a reflection of the low income renters and social renters living in the city and projected to continue to live in the city, comparative to the outer districts.

Private renter housing stress is experienced by households that have insufficient income to affordably pay their housing costs. This can occur because either housing costs are high relative to market norms or incomes in an area are low. Renter housing stress is defined as those households that are paying more than 30% of their gross household income in rent. The proportion of households paying unaffordable levels of rent increased in Waimakariri and Christchurch City and decline in Selwyn District. The proportion of renters paying high levels of rent relative to their incomes in concentrated in households with lower incomes.

Table 12: Number of Stressed Renters

	Modelled number of stressed private renters 2020	Stressed renters as a % of all households
Waimakariri District	2,500	10%
Christchurch City	22,350	14%
Selwyn District	1,680	7%
Total greater Christchurch	26,530	13%

Source: Modelled based on data from Statistics New Zealand
NB: Numbers are rounded to the nearest 10 in the modelling & consequently total households may vary between tables.

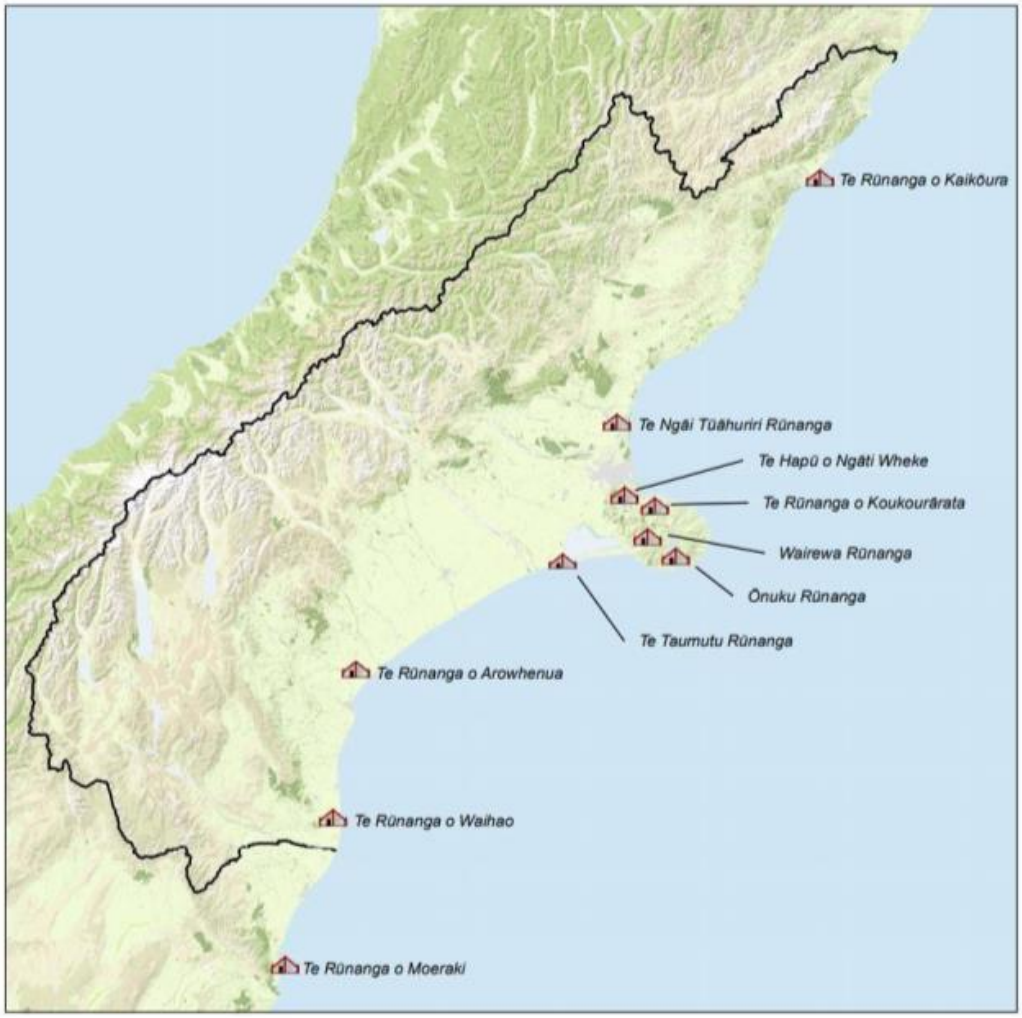
7.3.3. Māori Housing Demand

The HCA is required to identify demand for Papakāinga housing, development trends on Māori land, the impediments to living on or developing Māori land, or barriers to using traditional housing options. Home ownership rates for Māori are lower than the NZ average and trending lower. Combined with lower incomes this makes it harder to get into housing and stay there. Homelessness is an outcome from both historical issues and incomes. The Livingston and Associates report does not provide an analysis of housing need by ethnicity. However, the interviews provided confirmation that Māori make up a significant portion of the households seeking housing. Nationally, Māori make up half of the households on the Public Housing Register. Providers indicated similar percentages of whanau seeking assistance in their interviews (Page 14).

Figure 18: Map of Pāpatipu marae names and locations within the Canterbury Region[17]

[16] Community Housing Aotearoa (September 2020), Greater Christchurch Partnership Social and Affordable Housing Action Plan Report.

[17] From Christchurch District Plan Chapter 1.2.18.



The Mahaanui Iwi Management Plan 2013 outlines the desire to occupy and use ancestral lands. It seeks to work with local government in removing District Plan and other barriers to development on Maori land, in particular on land which was set aside as Maori Reserves, and in providing for papakāinga development.

Maori Reserve land was intended to provide an economic base for Ngāi Tahu living in particular (primarily rural) areas as follows:

- The right to dwell on land, and that right to remain in place in perpetuity to descendants.
- The right to mahinga kai, including the right to hunt, harvest and to develop mahinga kai resources.
- The right to develop land to achieve the above, including subdivision, and setting aside land for communal facilities or other activities to support the community.
- The right to develop a sustainable and growing economic base within the community that would sustain future generations[18].

[18] From Kāinga Nohoanga Baseline Report for SDC's DPR found here - https://www.selwyn.govt.nz/property-Andhttps://www.selwyn.govt.nz/property-And-building/planning/strategies-and-plans/selwyn-district-plan/selwyn-district-plan-review/supporting-information/baseline-reportsbuilding/planning/strategies-and-

Aspirations for the development of Māori land not only focus on creating housing opportunities, but also the provision of commercial, social and community facilities and opportunities to allow Ngāi Tahu whānui to fully occupy and use ancestral lands. Councils are in the process of reviewing District Plan provisions for Māori land and Papakāinga housing with a view to making them more enabling. Other land development impediments result from susceptibility to sea level rise and other natural hazards in some areas, and lack of access to infrastructure and bulk services. This will impact how much and how quickly housing and supporting facilities can be built as well as the viability and longevity of the infrastructure needed to support development. Further work is required on potential design and servicing solutions and funding to facilitate land development.

7.3.4. Locational Preferences and Trade-Offs

The settlement pattern of Greater Christchurch has principally been shaped from the creation and expansion of the colonial settlements laid down in the nineteenth Century. Whilst once focused on a strong Central City, during the 20th century the urban area expanded outwards and around a number of nodes, this development being largely enabled by the change in dominant transport mode from foot, bicycle and tram to the private car. The availability of significant areas of flat land and absence of physical barriers contributed to the ease with which the land was able to be subdivided and serviced. Thes factors, as well as low land values and landowners preferences, resulted in residential developments having lower urban densities in comparison to other New Zealand cities. More recently, the impacts of the earthquakes has seen a relocation of households and businesses from the more damaged eastern side of the City and eastern Kaiapoi to areas to the west.

The dynamics of the housing market are complex, and there are many factors that contribute to why any particular area experiences strong or weak demand and consequently growth. The development sector engagement analysis in Section 7.3 identifies that locational preference are driven by many reasons, including the availability of sections and houses, lifestyle, employment, education, family, financial circumstances, and at least in part, to where people want to go, and how often these trips need to be taken (people's willingness to travel). Locational attributes were identified as one of the most desirable features when looking for a house, as per the Grattan Institute Study (2011)[19]. These features included, but were not limited to, safety of people and property, attractiveness of the surrounding environment and convenience and access to work, healthcare services and schools.

Very little, if any, information is available in Greater Christchurch about what are the current and possible future factors that drive where people choose to live. Research is required to identify the trade-offs residents are willing to make, such as how far people are willing to travel for work, in terms of location of house. Furthermore, whether these reasons are likely to change over time, for example in response to age, financial changes in circumstance, or other conditions change such as transport costs or major improvements to an area are completed (e.g., rebuild of the central city, revitalisation of older commercial centres, the Ōtākaro Avon River Corridor, and Kaiapoi regeneration areas, and operation of rapid public transit routes). Research has been undertaken that may provide some insight as to why the demand for greenfield development has been consistently strong. A study carried out by Kusumastuti and Nicholson (2017) on mixed-use development is Christchurch, pointed out a similar trend. Surveyed residents wanted to live near supermarkets and parks, but less so near offices. Both studies show that people want a balance between housing features and location.

Importantly for Greater Christchurch as relative to other major cities, most housing settlement areas are highly accessible to places of work, leisure, and education, therefore transport and travel times are less influential when deciding where to live. Where people have chosen to live has, to a large part, been dictated by where housing markets have been enabled with supporting infrastructure and an area has been developed (as decided and determined by property developers). Proportionally there was more new dwellings being consented in greenfield areas than within the existing urban area. There was significant rezoning of greenfield land for new neighbourhoods in 2000 and again post-earthquake.

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plans/selwyn-district-plan/selwyn-district-plan-review/supportinghttps://www.selwyn.govt.nz/property-And-building/planning/strategies-and-plans/selwyn-district-plan/selwyn-district-plan-review/supporting-information/baseline-reportsinformation/baseline-reports

[19] The Housing We'd Choose, Grattan Institute, 2011

Further market analysis is however required on the relationship between greenfield and infill development (namely whether one offsets the other) to draw any further conclusions on what specifically has driven the historical demand for new neighbourhoods (i.e. house design, section size, price, and/or amenity) and whether these greenfield area drivers are the same or different between spatial areas (i.e. a new subdivision within Waimakariri compared to new neighbourhoods in Selwyn or Christchurch City). Furthermore, whether the greenfield area demand drivers are the same or different than for redevelopment areas or do some demand aspects such as proximity to schools, come more into play. Analysis of the interrelationship between housing preference and whether access to the employment opportunities and services provided within business centres and industrial parks is required to establish the extent to which this is influencing housing choices relative to other factors.

As a location the Christchurch Central City has historically accommodated a decreasing share of the overall population. This is more a product of an expanding urbanised area but nevertheless population growth in the Central City has, until recently, lagged the rate of population growth elsewhere and was reduced immediately post the 2010-2011 earthquakes. Public and private sector investment in the Central City over the last decade has seen increased popularity as a location. In the last two years population growth and new home completions have reached a decade high and there is a strong pipeline of new housing development projects currently in planning phases to meet current demand. There continues to be strong interest in the Central City from the development community and from potential buyers. It remains a priority growth area for the Christchurch City Council and continues to attract public investment activity. The strong uptake of housing in the central city maybe an indication that access to employment is overtaking the perceived benefits (such as space, privacy, and capital gains) of standalone dwellings in the suburbs and townships in Selwyn and Waimakariri districts. The success of the I-Zone and I-Port industrial hubs in Rolleston, and the enhancement of the town centres in Kaiapoi, Rangiora and Rolleston, are other examples of where access to the employment opportunities offered within business centres may be influencing housing preferences and demand.

Greater Christchurch will be affected by climate change, and this will have an effect on future housing demand, as well as the resilience of the current housing stock to natural hazard risks. While data has been collected and analysed regarding some impacts of climate change, such as coastal inundation and ground water flooding, further analysis is required to ascertain how the current housing stock will be affected and where new housing should be built. Research needs to be carried out to determine public perception of climate change impacts and how this will affect future housing demand in Greater Christchurch.

7.3.5. National and International Trends and Influencing Factors

It is useful to understand what other cities are experiencing in terms of housing demand, and whether similar findings might be applicable to Greater Christchurch, if not in the short term, but the longer term. There is a range of information regarding what other cities are doing in order to meet the growing population. Tension around development in Sydney and Melbourne show that this issue is not unique to New Zealand. There are several key points that relate to Greater Christchurch. A two part study in Melbourne and Sydney, carried out by the Grattan Institute illustrates that housing stock and housing demand do not meet. There is a large shortage of semi-detached homes and apartments in the middle and outer areas. In Sydney 7.4% would choose semi-detached, however only 2.8% are supplied. In the study, when people were asked to choose anything they want, then they chose a large detached house near the centre of the city, which is an unlikely outcome and it is acknowledged that there are trade-offs in real life (specifically price). In this study, closeness to work did not rank highly and people were more concerned with the number of bedrooms, garage and living space provided, and for families, the location of schools was important.

These national and international trends were reflected in an Auckland-wide housing demand survey in 2015. Auckland Council's Research and Evaluation Unit commissioned a study to investigate what is important to Auckland households when choosing a place to live and to explore the housing that residents would choose to live in, if it was available (Yeoman et al. 2016). This research provided an understanding of the demand of housing, in both, an unconstrained and income constrained context. The key findings indicate that the choice of housing types favoured medium and large sized dwellings, 61% and 26% respectively. While the largest group chose detached housing as their final choice (52%), the research shows that there is also a willingness to live in other housing types such as attached housing and apartments (48%). This is especially the case where it means that residents are able to live in the location of their choice. However, the Choice Modelling data indicates that residents were

more likely to choose attached dwellings and apartments over stand-alone dwellings and were also willing to trade-off their preferred location when dwelling sizes were larger (as determined by the number of bedrooms). This means that, in general, people prefer larger dwellings. The report concludes that while there is a demand for more 'higher density' dwelling types in Auckland, there is clearly a mismatch between the current supply of dwelling typologies and the housing demand as per the survey. Data regarding the type and location of the housing stock in GC needs to be collected and documented, so as to determine whether we might expect future housing demand to mirror what is being experienced in Auckland and Australia.

7.3.6. Migrant Demand

Migrant demand comes in two forms; from other countries, and from other regions within the country.

International Migration

Stats NZ track international migration as part of the Population Estimates. The following table shows recent international migration and the impact of closed borders during the pandemic. Population growth largely consists of international migration with almost 7,000 people arriving to the area in 2020. This dropped to 250 during 2021.

Table 13: International Migration by TA

TA	2019	2020	2021	2022
Waimakariri	170	350	80	-90
Christchurch	3,400	5,500	-560	-910
Selwyn	500	580	-120	-120
Total	4,070	6,430	-600	-1,120

The expected net migration for Greater Christchurch is included in the Stats NZ projections, however the type of migrants has changed and this could influence future housing demand. Since the 2011 earthquakes, Greater Christchurch has seen a growth in migrants from South Asia, especially the Philippines and India. However, there has been a decrease in the number of migrants from Japan, the UK and Ireland. The growing origins of migrants lead to more diversity and more diversity within the housing market, e.g. some families require larger homes to accommodate their extended families. Additionally, the origin of foreign arrivals can affect the housing price. A 1,000 person increase in monthly European/UK arrivals raises real house prices by 8 percent after 2 years, whereas a 1,000-person increase in monthly Asian arrivals raises real house prices by around 6 percent.

Internal Migration

Stats NZ track international migration as part of the Population Estimates. The following table shows consistent trends in people within New Zealand moving to the area. Christchurch generally loses people due to 'Age and Stage' or lifestyle decisions, whereas the districts growth is largely from internal migration. 2020 saw almost as many people leave Christchurch as arrived in Selwyn, whereas 2021 saw an increase in the total people moving to the area with less leaving Christchurch.

Table 14: Internal Migration by TA

TA	2019	2020	2021	2022
Waimakariri	1,100	1,400	1,600	1,300
Christchurch	-1,500	-2,600	-2,700	-1,200
Selwyn	1,900	2,800	4,700	3,000
Total	1,500	1,600	3,600	3,100

7.3.7. Ethnicity and Housing

Housing plays a critical role in the social structure, as it provides a place for meetings, traditions, rituals, and other cultural expressions [20]. Māori and Pacific households often have culturally specific requirements and preferences in relation to dwelling design, which can influence their housing preferences, choices and tradeoffs. New Zealand wide studies indicates that Pacific peoples often prefer to live in an extended family living situation, but it is also noted that this could be a strategy to cope with the high costs of accommodation[21]. This tendency for extended family living arrangements should be taken into consideration as there will be a requirement for dwelling types that house a larger than average number of people.

Census data on ethnicity is shown in the table below. This shows that the majority of the area identifies as European at 74%, with the next two ethnicities identified as Asian (11%) and Maori (9%).

Table 15: Census Data on Ethnicity

Total	2006	2013	2018
European	70%	77%	74%
Maori	7%	7%	9%
Pacific	2%	2%	3%
Asian	6%	7%	11%
Middle East / Latin	1%	1%	1%
Other	12%	2%	1%
Not Elsewhere Included	3%	4%	0%

Table 16: Households by tenure by ethnicity

[20] Housing Choice and Preference: A review of Literature, Wildish Bianca, Auckland Council, 2015

[21] Housing Choice and Preference: A review of Literature, Wildish Bianca, Auckland Council, 2015

	2013			2018			Change 2013 to 2018		
	Owner Occ	Renters	HOR	Owner Occ	Renters	HOR	Owner Occ	Renters	HOR
Waimakariri District									
Māori	1,095	561	66%	1,644	705	70%	549	144	4%
Pasifika	93	36	72%	165	81	67%	72	45	-5%
Asian	237	87	73%	456	204	69%	219	117	-4%
NZ European & Other	12,783	2,781	82%	15,132	3,144	83%	2,349	363	1%
Total	14,208	3,465	80%	17,397	4,134	81%	3,189	669	1%
Christchurch City									
Māori	5,802	7,359	44%	7,731	8,949	46%	1,929	1,590	2%
Pasifika	999	1,617	38%	1,392	2,085	40%	393	468	2%
Asian	5,895	4,446	57%	9,474	8,400	53%	3,579	3,954	-4%
NZ European & Other	66,075	29,016	69%	67,836	28,767	70%	1,761	-249	1%
Total	78,768	42,438	65%	86,433	48,201	64%	7,665	5,763	-1%
Selwyn District									
Māori	831	426	66%	1,488	666	69%	657	240	3%
Pasifika	75	48	61%	162	93	64%	87	45	3%
Asian	285	201	59%	882	444	67%	597	243	8%
NZ European & Other	10,128	2,415	81%	13,476	2,835	83%	3,348	420	2%
Total	11,319	3,090	79%	16,008	4,038	80%	4,689	948	1%

Source: Statistics New Zealand

The rates of owner occupation by ethnicity is higher in Waimakariri and Selwyn when compared to Christchurch City. Households with people of New Zealander / European descent have higher rates of owner occupation than households of other ethnicities. Other key trends include between 2013 and 2018:

- The number of owner occupiers and renter households by ethnicity increased in all three authority areas with the exception of renter households of New Zealand / European descent living in Christchurch City;
- The number of owner occupier households of New Zealander / European descent living in Selwyn and Waimakariri Districts increased faster than those living in Christchurch City (+2,349 households in Waimakariri and +3,348 households in Selwyn compared to +1,761 households in Christchurch City);
- Rate of owner occupation increased for households of Māori and New Zealander / European descent across all three local authority areas;
- Rates of owner occupation for households with people of Pasifika descent increased in Christchurch City and Selwyn district but declined in Waimakariri District; and
- Rates of owner occupation for households of Asian descent fell in Waimakariri District and Christchurch City but increased in Selwyn District.

7.3.8. Household Crowding

The size of households is an important factor to monitor. If appropriate housing is not supplied by the market, crowding or underutilisation occurs. Analysis uses the Canadian National Occupancy Standard (CNOS), which is also used by the New Zealand Government as a core housing indicator. It determines the number of bedrooms a dwelling should have to provide freedom from crowding. The CNOS is based on the number, age, sex and interrelationships of household members. The CNOS states that:

- No more than two people shall share a bedroom
- Parents or couples may share a bedroom
- Children under 5 years, either of the same sex or opposite sex may share a bedroom
- Children under 18 years of the same sex may share a bedroom
- A child aged 5 to 17 years should not share a bedroom with a child under 5 of the opposite sex

- Single adults 18 years and over and any unpaired children require a separate bedroom[22]

When looking at Christchurch, Selwyn, and Waimakariri, Christchurch City had the highest relative level of crowding with 9% of renter households crowded, whereas Selwyn has relatively low levels of crowding compared to other urban areas. Although the relative level of crowding is low, crowded households still have significant levels of housing need. On the other hand, 52% of total dwellings have 2 or more bedrooms available, potentially suggesting underutilisation.

Table 17: Crowding and Underutilisation

	Owner Occupiers		Renters		Total households	
	Dwellings	% of total	Dwellings	% of total	Dwellings	% of total
Waimakariri District						
1 bedroom needed (crowded)	210	1%	135	4%	345	2%
2 + bdrms needed (severely crowded)	39	0%	18	1%	57	0%
Total - crowded	249	1%	153	5%	402	2%
Total - No extra bedrooms required	1,776	10%	906	30%	2,682	13%
1 bedroom spare	5,115	30%	1,131	37%	6,246	31%
2 or more bedrooms spare	10,038	58%	873	29%	10,911	54%
Total not crowded	16,929	99%	2,910	95%	19,839	98%
Total stated	17,178	100%	3,063	100%	20,241	100%
Christchurch City						
1 bedroom needed (crowded)	1,470	2%	2,421	7%	3,891	3%
2 + bdrms needed (severely crowded)	345	0%	699	2%	1,044	1%
Total - crowded	1,815	2%	3,120	9%	4,935	4%
Total - No extra bedrooms required	11,031	13%	12,663	35%	23,694	19%
1 bedroom spare	30,681	36%	14,136	39%	44,817	37%
2 or more bedrooms spare	42,267	49%	6,228	17%	48,495	40%
Total not crowded	83,979	98%	33,027	91%	117,006	96%
Total stated	85,794	100%	36,147	100%	121,941	100%
Selwyn District						
1 bedroom needed (crowded)	147	1%	144	4%	291	2%
2 + bdrms needed (severely crowded)	42	0%	24	1%	66	0%
Total - crowded	189	1%	168	5%	357	2%
Total - No extra bedrooms required	1,242	9%	717	22%	1,959	12%
1 bedroom spare	3,882	29%	1,254	38%	5,136	30%
2 or more bedrooms spare	8,304	61%	1,152	35%	9,456	56%
Total not crowded	13,428	99%	3,123	95%	16,551	98%
Total stated	13,617	100%	3,291	100%	16,908	100%

7.3.9. Demand for Visitor Accommodation

The NPS-UDC Guide on evidence and monitoring identifies key sources of information that provide a proxy for analysing whether visitor demand is numerically and proportionally significant. This is done by comparing the 3 TAs to the national average. These are census counts of dwellings and households and the proportion of dwellings unoccupied on census night. The tables below outline the ratio of dwellings for every household and the percentage of households unoccupied on Census night. The tables shows that the three TAs are under the New Zealand average and therefore visitor demand is consistent with national averages and therefore not numerically and proportionally significant to require an increase in the household projection.

[22] Statistics New Zealand, http://archive.stats.govt.nz/tools_and_services/nzdotstat/tables-by-subject/housing-quality-tables/crowding-occupancyrate.aspx, 2018

Table 18: Ratio of 2018 Census Count of Dwellings and Households

Area	Ratio	Dwellings	Households
New Zealand	1.14	1,866,517	1,653,792
3 TAs	1.11	201,480	181,038
Queenstown-Lakes	1.55	20,403	13,176

Table 19: Percentage of Dwellings Unoccupied on 2018 Census Night

Area	Percentage
New Zealand	11%
3 TAs	8%
Queenstown-Lakes	29%

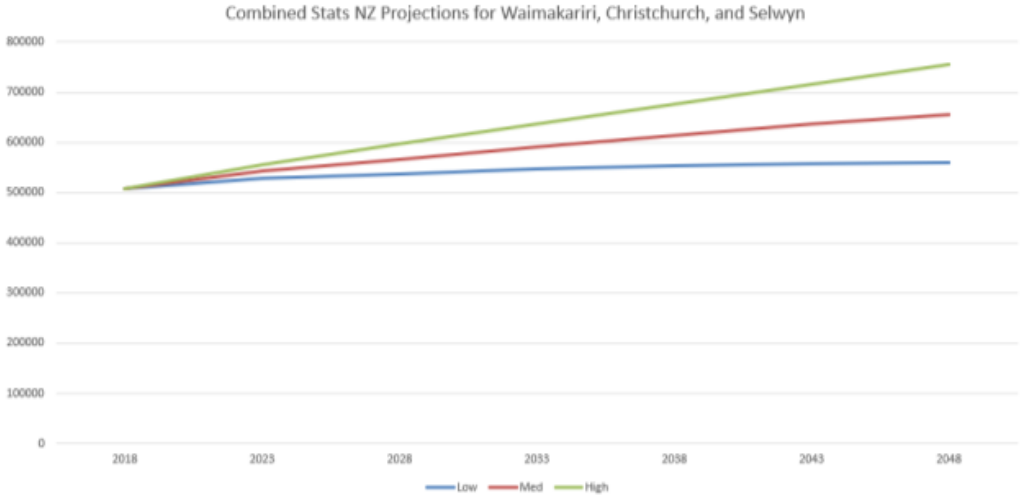
7.4. Demand

7.4.1. Projection Ranges

Identifying Base Projection Data

The initial starting point is the Stats NZ 2018 subnational population projections (low, medium and high projections)[23], as it is the best information available and achieves consistency in terms of methods and consistency with national-level projections[24]. These provide an indication of future population change based on assumptions about future demographic behaviour (birth rates, death rates, net migration)[25]. The Stats NZ 2018 Estimate[26] is the starting point for these projections, and this shows the 3 Territorial Authorities (TAs) have 508,400 population and the range of projections show, by 2048, the projected population is between 558,400 to 755,100.

Figure 19: 2018 Combined Projections for Waimakariri, Christchurch, and Selwyn Councils



[23] https://www.stats.govt.nz/news/new-zealands-population-could-reach-6-million-by-2050/

[24] https://www.stats.govt.nz/methods/population-statistics-user-guide

[25] For more information on different Stats NZ terms and measures on population, visit https://www.stats.govt.nz/methods/population-statistics-user-guide.

[26] https://www.stats.govt.nz/news/migration-drives-high-population-growth/

Identify Range of Projections

The initial range of projections are based on Stat NZ's 2018 subnational population projections. Other projection possibilities considered were relying solely on take-up data, and adjusting immigration based on Treasury's report[27]. Take-up is not a one-to-one correlation to growth, as shown in 7.3.1 so is not a good sole measure of growth. Treasury's report (developed before COVID restrictions) considers immigration as an economic decision and therefore New Zealand's relative economic conditions among other things. The result is slightly more population and more of a working age. The results are at a national level and do not provide projections by TA.

The following table outlines the additional population projected for Waimakariri, Christchurch, and Selwyn combined, and shown over the NPS-UD timeframes.

Table 20: Range of Projections for Total TAs

Area	Short Term 2022 – 2025	Medium Term 2025 – 2032	Long Term 2032 – 2052	Total 2022 – 2052
High	25,500 (8,500 p.a.)	56,520 (8,074 p.a.)	156,680 (7,834 p.a.)	238,700 (7,957 p.a.)
Medium	16,560 (5,520 p.a.)	34,540 (4,934 p.a.)	83,560 (4,934 p.a.)	134,660 (4,489 p.a.)
Low	7,680 (2,560 p.a.)	12,980 (1,854 p.a.)	13,880 (694 p.a.)	34,540 (1,151 p.a.)

The range of projections are based on assumptions about fertility rate, life expectancy and net migration. Fertility is the average number of births that women would have. Life expectancy is the average length of life. Net migration is the arrivals minus departures.

Table 21: Range of Assumptions for Waimakariri District

Waimakariri	Range	Fertility	Life Expectancy Male	Life Expectancy Female	Net Migration
High	2023	2.01	81.3	84.6	8,500
	2048	2.00	85.2	88.1	5,500
Medium	2023	1.90	80.8	84.1	7,000
	2048	1.79	83.9	87	4,000
Low	2023	1.79	80.3	83.6	5,500
	2048	1.58	82.3	85.6	2,500

Table 22: Range of Assumptions for Christchurch City

Christchurch	Range	Fertility	Life Expectancy Male	Life Expectancy Female	Net Migration
High	2023	1.70	80.7	84.0	6,000
	2048	1.71	84.6	87.6	15,000
Medium	2023	1.52	83.3	86.4	-1,500
	2048	1.95	84.7	88.0	7,500
Low	2023	1.51	79.7	83.0	-9,000
	2048	1.33	81.7	85.0	0

[27] https://www.treasury.govt.nz/sites/default/files/2018-04/sense-partners-report.pdf

Table 23: Range of Assumptions for Selwyn District

Selwyn	Range	Fertility	Life Expectancy Male	Life Expectancy Female	Net Migration
High	2023	2.06	85.2	88.3	18,500
	2048	2.05	89.0	91.7	7,000
Medium	2023	1.95	84.7	88.0	16,000
	2048	1.84	87.6	90.7	4,500
Low	2023	1.84	84.2	87.3	13,500
	2048	1.63	86.1	89.1	2,000

7.4.2. Most Likely Projection

The most likely projection sits within the projection range identified above. To identify the most likely projection, the growth (based on estimates) of each TA was compared to the projections within each TA. The following tables show the revised 2018 Medium and High Population Projections shown as annual averages compared with the Stats NZ Population Estimates Average of the last 5 years. The medium-term annual average is 2018 to 2028 and the long-term annual average is 2018 to 2048.

Waimakariri

Waimakariri has seen higher annual population growth than projected over the past 5 years. The following table shows population trends within Waimakariri. The 5-year estimate shows average growth of 1,650. This sits just above the average yearly High Projection. Therefore, the most appropriate projection for Waimakariri is High.

Table 24: WDC Projection and Estimate Comparison

	Medium Term (Annual Average)	Long Term (Annual Average)
Medium Projection	1,210	837
High Projection	1,580	1,254
Last 5 Year Average Growth	1,650	

Christchurch

The following table shows population trends within Christchurch. The 5-year estimate shows average growth of 1,375. This sits just below the Medium Projection. Therefore, the most appropriate projection for Christchurch is Medium.

Table 25: CCC Projection and Estimate Comparison

	Medium Term (Annual Average)	Long Term (Annual Average)
Medium Projection	1,700	2,134
High Projection	3,670	4,337
Last 5 Year Average Growth	1,375	

Selwyn

The following table shows population trends within Selwyn. The 5-year estimate shows average growth of 4,000. This sits above the High Projection. Therefore, the most appropriate projection for Selwyn is High.

Table 26: SDC Projection and Estimate Comparison

	Medium Term (Annual Average)	Long Term (Annual Average)
Medium Projection	2,920	1,940
High Projection	3,520	2,634
Last 5 Year Average Growth	4,000	

Identifying a Starting Population Projection

The 2022 Stats NZ Population Estimate is used as the starting point. This is because they are the best-known population point. The preferred projections are then recalibrated to this starting point.

Table 27: Stats NZ Population Estimates for TA

Area	2022 Population Estimate
Waimakariri	67,900
Christchurch	389,300
Selwyn	79,300
Total	536,500

Assumptions and Uncertainties

The most significant uncertainty is the impact of COVID-19 on international migration and on where people decide to live and move within New Zealand. Key assumptions are that there are no isolated impacts on the region, such as natural disasters, and no impacts on other regions that force or encourage people to move to the region. There are other government policies that could encourage or discourage where people live and what types of houses are built. This could be around transport, subsidies for different housing typologies, lending practices etc.

The potential result of these uncertainties is that a low projection becomes more appropriate. This would mean less expected growth and therefore less capacity required. While this may be a reality, the long-term projections are always uncertain, and the review of these projections should occur every three years. It is also a conservative approach for planning to project higher so that there is capacity with the timing and availability of land becoming the critical factor.

The following are the TA projections used.

Table 28: TA Population Projections

	2022	2025	2032	2052	Total Change
Total Projection	536,500	558,640	600,560	708,840	+172,340

7.4.3. Population to Household Conversion

The population was then converted to households. This uses Stats NZ Average Household Size Projection from the 2013 Household projection assumptions. The declining rate reflects the changing demographics of more older households and changing family structures. This is discussed in the Housing in Aotearoa 2020 report by Stats NZ[28] and the trends identified are reflected in the Stats NZ projection assumptions. The higher Selwyn figure reflects the current younger demographic as compared to Christchurch and Waimakariri, but the trend is in the same direction.

Table 29: Stats NZ Average Household Size

[28] https://www.stats.govt.nz/assets/Uploads/Reports/Housing-in-Aotearoa-2020/Download-data/housing-in-aotearoa-2020.pdf

Area	2021 Average Household Size	2024 Average Household Size	2031 Average Household Size	2051 Average Household Size
Waimakariri	2.52	2.47	2.4	2.34
Christchurch	2.54	2.52	2.49	2.45
Selwyn	2.90	2.87	2.80	2.65

7.4.4. Total Household to GCP Urban and Rest of TA Areas

Table 30: TA Urban GCP Projections

Urban GCP Household Demand	Short Term 2022 – 2025	Medium Term 2022 – 2032	Long Term 2022 – 2052
Waimakariri	1,829	4,682	11,308
Christchurch	3,208	11,782	32,103
Selwyn	3,000	8,324	23,414
Total	8,037	24,788	66,825

Table 31: Rest of TA Projections

Rest of TA Household Demand	Short Term 2022 – 2025	Medium Term 2022 – 2032	Long Term 2022 – 2052
Waimakariri	936	2,432	5,688
Christchurch	48	219	376
Selwyn	1,300	2,652	6,199
Total	2,284	5,303	12,263

7.4.5. GCP Area Household Demand by Typology

As with location above, the NPS-UD allows local authorities discretion in defining typologies, however it sets a minimum of standalone and attached dwellings. The capacity assessment uses standalone and attached (semi-detached and terraced) dwellings for typology. This is because the level of other typologies (e.g., apartments) currently in the area (and especially in Selwyn and Waimakariri) are not sufficient to distinguish from attached.

Table 32: TA GCP Urban Projection by Typology %

Urban Household Demand by Typology	Short Term 2022 – 2025		Medium Term 2022 - 2032		Long Term 2022 - 2052	
	Standalone	Multi-Unit	Standalone	Multi-Unit	Standalone	Multi-Unit
Waimakariri	92%	8%	91%	9%	89%	11%
Christchurch	78%	22%	76%	24%	72%	28%
Selwyn	97%	3%	96%	4%	96%	4%

Table 33: TA GCP Urban Projection by Typology Totals

Urban Household Demand by Typology	Short Term 2022 – 2025		Medium Term 2022 - 2032		Long Term 2022 - 2052	
	Standalone	Multi-Unit	Standalone	Multi-Unit	Standalone	Multi-Unit
Waimakariri	1,595	234	3,995	687	9,491	1,817
Christchurch	0	3,208	2,103	9,679	10,163	21,939

Selwyn	2,908	92	8,001	323	22,509	906
Total	4,503	3,534	14,099	10,689	42,163	24,662

7.4.6. GCP Household Demand by Typology with Competitiveness Margin

Following the demand analysis, the competitiveness margins outlined in the NPS-UD are applied. These are 20% in the short (to 2024) and medium (to 2031) term, and 15% in the long term (from 2031 – 2051).

Table 34: TA Urban Projection by Typology with Competitiveness Margin

Urban Household Demand by Typology + Competitiveness	Short Term 2022 – 2025		Medium Term 2022 - 2032		Long Term 2022 - 2052	
	Standalone	Multi-Unit	Standalone	Multi-Unit	Standalone	Multi-Unit
Waimakariri	1,914	281	4,794	824	11,114	2,124
Christchurch	0	3,850	2,524	11,615	11,793	25,714
Selwyn	3,490	110	9,601	388	26,285	1,058
Total	5,404	4,241	16,919	12,827	49,192	28,896

7.5. Housing Development Capacity

Housing capacity is assessed broadly using the following approach: First, the *plan-enabled* capacity is estimated and then adjusted to what is infrastructure ready. This capacity is further modified to what is *reasonably expected to be realised* based on observed patterns of development. The final step is to assess what of the plan-enabled capacity is feasible for development based on a number of general assumptions around development costs and opportunities.

Plan-enabled capacity estimates the maximum that could be built within the allowances of the district plan. For this estimate it is assumed that current dwellings and structures are removed and replaced by new dwellings that maximise the potential of the relevant zone.

'Reasonably expected to be realised' (herewith referred to as "expected"), modifies the plan-enabled capacity by applying historic land development or take-up rates (i.e., household per hectare averages) and changes in typologies. As this assessment is based on what development is actually occurring, it provides a higher degree of certainty (relative to plan-enabled) for residential density yield once a site, block and neighbourhood is fully redeveloped or developed. The *infrastructure ready* assessment removes capacity that cannot be serviced by the wider network, e.g., a wastewater system that can service only a limited number of additional houses and is not currently being considered for upgrading. These considerations are generally broader network issues rather than related to connections to main trunk network.

The feasibility assessment assesses the commercial viability of development capacity by modelling developer costs, opportunities, and potential sales prices. This approach can potentially identify those areas where the plan-enabled/expected capacity overstates the development potential. Conversely it may also identify development opportunities that produce higher dwelling yields that estimated by the expected assessment (i.e., there is the potential for higher density than has historically been the case). Lastly, feasibility can be checked against the take-up rates that inform the expected calculation. This can show that development is occurring in areas that are not modelled as commercially feasible for development but may in reality being built. Reasons being, a developer may have costs lower than the modelled costs, a developer has different profit goals, or the sales price of developed land and dwellings is higher than anticipated. This is consistent with NPS-UD 3.26.

Further details on the methodology, caveats and contextual considerations is provided in Appendix 2: Methods, Inputs, and Assumptions.

7.5.1. Plan-Enabled Capacity

This section discusses and tabulates the yield based on the underlying District Plan zoning and associated rules. Capacity is determined from an assessment of both vacant and built land, incorporating redevelopment (intensification) and greenfield development potential. Plan-enabled is outlined in the NPS-UD (in section 3.4) as:

Table 35: NPS-UD Capacity, Timeframes, and Implications

Timeframe	Includes
Short	Land that is zoned (either permitted, controlled, or restricted discretionary) in an Operative District Plan.
Medium	Land that is zoned (either permitted, controlled, or restricted discretionary) in an Operative or Proposed District Plan.
Long	Land that is zoned (either permitted, controlled, or restricted discretionary) in an Operative or Proposed District Plan or land identified as Future Urban in an FDS.

The approaches for each district are slightly different as they have different areas of emphasis. While the approach to the greenfield capacity assessment is consistent across the three districts, the approach to assessing additional capacity within the existing urban areas reflects the emphasis placed upon intensification and the capacity for intensification within each district. Christchurch City and Waimakariri townships having a greater redevelopment potential compared to the 'new towns' within Selwyn.

Capacity from suburban infill in Christchurch City (i.e., subdividing the vacant rear part of an existing allotment) is limited, with most plan-enabled permitted development opportunities having already been taken-up. Infill is still however possible outside of permitted development where a resource consent may be needed. The majority of intensification opportunities in Christchurch are through the comprehensive site or multiple site redevelopment approach. For Selwyn and Waimakariri, capacity is focused more on greenfield uptake and backfill capacity in suburban zones, with less focus on comprehensive site redevelopment. This is due to a combination of a number of factors including market forces, the age of existing housing stock (i.e., more recent development), past patterns of development, and the size and form of the townships.

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Analysis of plan-enabled (theoretical) and expected capacity was undertaken at an urban block level, where attributes were assessed for the:

- current level of housing development,
- average density of the block,
- potential minimum and maximum 'plan enabled' density, and the anticipated density based on recent patterns of development.

A range of outputs were generated from this analysis to compare the difference between the current density of the block compared to the various measure of potential density of the block, i.e. the anticipated net gain in housing should development occur. Other determinants of capacity were as follows:

- Land zoned *Residential Guest Accommodation* was excluded as it is anticipated that this is used for hotels and not housing.
- Land within the *Accommodation and Community Facilities Overlay* was excluded as currently it is used and encouraged for accommodation (which could provide around 600 additional households).
- Land within the High Flood Hazard area was excluded as the District Plan seeks to avoid development within these areas due to the flood risk.
- *Commercial Zones (outside the Central City):* The Commercial Core, Commercial Local, Commercial Banks Peninsula, and Commercial Mixed Use Zones all permit residential activity located either above or at the rear of a development site. Since the earthquakes, more residential units located within commercial areas have been removed than have been built. So, while there is potential capacity within these areas, the recent evidence suggests it is not occurring and, therefore, is not included within this capacity assessment.

- *Commercial Central City:* While areas such as the 'Frame' and the Central City Mixed Use Zone have been included in the assessment, the potential within the Commercial Central City Business Zone, which permits housing above the ground floor, requires more work to determine its potential capacity. Therefore, this land is currently excluded until more work is undertaken on potential capacity.
- *Papakāinga/Kāinga Nohoanga Zone* allows contiguous Māori land (identified through Te Ture Whenua Māori Act 1993) to be treated as one site and has no site density controls. This provides potential for a wide variation in density. More work needs to be done to determine the potential capacity and the extent of recent take-up within this zone and therefore, this land is currently excluded from the capacity assessment.
- *Non-residential activities in residential zones:* Currently 2.7% of residential sites are occupied by non-residential activities, including halls, education, and community facilities. This adjusts the theoretical capacity by 2%.
- *Residential Medium Density (RMD) Zone:* The theoretical capacity applied is based on modelling of the zone standards. The modelling shows that a density of 120hh/ha is possible where the development potential of the site is maximised. Recognising that that it is unlikely to always be possible to maximise development outcomes this has been reduced to 100hh/ha. Analysis of recent development activity shows that a more typical density outcome is in the 60 to 90 hh/ha range, where a multi-unit modest sized townhouse development approach used, typically on a single land parcel. The majority of developments in the RMD zone are of this type. Developments achieving higher densities have been completed and these are typically associated with larger development sites.
- *Residential Central City Zone*: This provides for high density housing, with a higher height limit than the RMD zone, resulting in a theoretical potential yield in well in excess of 100hh/ha. Historically, developers have not generally taken full advantage of the enabled height limit but have instead limited development to two and three stories townhouse typologies. There are however examples of multi-storey apartment buildings that achieve densities of over 200hh/ha. Townhouse development with dedicated on-site car parking are commonly achieving 60 to 80hh/ha. Townhouse development with no on-site parking (which are becoming more common) are often exceeding densities of 150hh/ha.
- *Commercial Mixed Use Zone:* This zone enables residential activity. There are a number of recent (since 2018) examples of development in the zone. Typically, development outcomes are similar to those of the Residential Central City zone, achieving in excess of 100hh/ha in a number of development examples.
- *Residential Suburban Density Transition Zone:* This zone has been operative since the 2016 District Plan review enabling development of multi-unit housing in addition to single detached dwellings. At the time of the 2018 Capacity Assessment there were few examples of multi-unit developments that had taken advantage of the new plan provisions. However, this is now a common development outcome in the zone, with development typologies similar to those for the RMD zone, namely two storey terrace and duplex townhouses. Density outcomes are usually fall in the 60 to 80hh/ha range.
- *Minor Residential Units, Retirement Villages within all Residential Zones:* Within the Christchurch District Plan minor residential units are permitted activities within the Residential Suburban Zone. This allows for small, independent units to be built on sites greater than 450m^2. As such for all Residential Suburban zoned sites greater than 450m^2 there is capacity for an additional unit. The provision for Minor Residential Units is new in the District Plan, the previously provisions were limited to family flats and therefore not directly comparable. Consequently, it is not possible to accurately make an assessment of the likely update of Minor Residential Units in the Christchurch City reasonably expected to be realised capacity.
- *Retirement villages* are permitted activities throughout the Residential Suburban Zone and could also increase the total theoretical capacity, however more detailed analysis work is required to understand and identify future potential retirement village locations and significance on capacity. Therefore, retirement villages are currently excluded from the capacity assessment density calculation.
- *Enhanced Development Mechanism (EDM)*: The EDM allows for comprehensive development if it meets certain criteria. This again could provide for greater housing densities and overall capacity; however likely development or uptake is limited, and similar density outcomes can be achieved within the rules of the zones where the EDM applies. This additional potential yield has therefore been excluded from the capacity calculation.

Selwyn and Waimakariri District Council

The Selwyn and Waimakariri District plans were both under review at the time of this assessment. This assessment is based on the proposed plan zonings, as well as the variations to the proposed plans to comply with the Enabling Housing Act.

This evaluation excludes rural zones and existing development areas / small settlements in both district plans. In Selwyn, the following areas have also been included as plan enabled capacity:

- South Faringdon (Special Housing Accord Area)
- Acland Park (Special Housing Accord Area)
- South-East and South-West Faringdon (COVID fast-track approved area)
- Faringdon Oval (PC70) (COVID fast-track approved area)
- Approved plan changes; PC68, PC69, PC71 and PC72[29].

Housing supply for Selwyn and Waimakariri has been reported from the Selwyn Capacity for Growth Model (SCGM) and Waimakariri Capacity for Growth Model (WCGM), both models having been prepared by Formative Limited. These two models assess capacity at a site-specific level. This estimates housing supply at a site-specific level by combining geospatial data with District Plan subdivision density standards, permitted activity bulk and location rules and accounting for 'vacant' (where there are no consented buildings on the site) and 'vacant potential' (where potential exists to subdivide based on the subdivision standards) land to determine the theoretical capacity of each property[23].

For both the SCGM and WCGM the following assumptions have been applied:

- 'Undevelopable' lots have been removed, including roads and railways, hydrological features, vested roads and reserves and designated sites;
- Dwelling typology is assumed to be what the District Plans enable;
- Estimates are rounded down to the nearest whole number;
- Amalgamation of parcels is not accounted for;
- That 25% of land area is set aside for infrastructure;
- That no commercial buildings will be constructed in residential zones[30].

This parcel specific information has been aggregated up to the TA level for reporting capacity.

Table 36: Plan Enabled Urban Capacity

GCP Urban Capacity	Short 2021 – 2024	Medium 2021 – 2031	Long 2021 – 2051
Waimakariri	79,345	79,345	79,345
Christchurch	544,000	544,000	544,000
Selwyn	108,024	108,024	118,554
Total	731,369	731,369	741,899

7.5.2. Reasonably Expected to be Realised

This section outlines what is reasonably expected to be realised or 'expected capacity'. This follows the process outlined in 3.26 (2) (c) where the information regarding past developments trends modifies the plan-enabled capacity by changing the densities and scale of potential development. This capacity is then tested as to whether it is feasible. The total theoretical capacity within Greater Christchurch is 213,427 dwellings and reasonably expected to be realised capacity is 84,539 dwellings, being a difference of some 128,888 households. This is largely due to the difference in theoretical and modified density counts for Christchurch and the spatial analysis for Selwyn and Waimakariri.

Christchurch

[29] PC69, PC71, and PC72 are under appeal and could change capacity once resolved.

[30] Home office/small business can cohabitate within residential dwellings.

In Christchurch, the largest difference between plan-enabled and expected capacity, results within the Residential Medium Density (RMD), Residential Central City (RCC), Residential Suburban Density Transition (RSDT) and Residential Suburban (RS) zones. What is plan-enabled is significantly more than the densities that have historically and, until relatively recently, are being achieved (built). However, the trend is towards an increasing density through redevelopment, particularly within the RMD and RSDT zones. For the RMD zone a study of the Riccarton area has shown a progressive increase in density over time. For the RSDT zone there is an increasing utilisation of the multi-unit provisions introduced through the District Plan Review (refer Decision 10, July 2016), leading to site and block densities much closer to the RMD zone.

Table 37: Christchurch Residential Density Assumptions

Zone / Overlay	Theoretical (hh/ha)	Modified (hh/ha	Reason
Residential Suburban	25	15.9	Theoretical - 400m^2 minimum lot size – DPR 14.4.1.3 RD1
Residential Suburban Density Transition	70	50	Theoretical - Potential from RSDT and RMD modelling. Theoretical increased to 70hh/ha recognising the potential for multi-unit development enabled in the zone. Modified – observation of recent (last two years) of multi-unit development activity in the zone.
Residential Medium Density	100	60	Theoretical - Potential from RSDT and RMD modelling Modified - Potential from Riccarton evidence (discussed above) and revised upwards based on observations of recent development activity more widely across the zone.
Residential New Neighbourhood	15	15	Theoretical and Modified - Residential Policy – 14.2.1.1 a. iv.
Residential Central City	150	100	Theoretical - 200m^2 minimum lot size – DPR 14.6.2.11, however comprehensive development possible. Modified – observations of recent development activity, noting that there is a wide range in density outcomes driven by typology and whether on-site parking is provided. All observed development typologies are achieving high density outcomes.
Residential Hills	17	9.6	Theoretical - 585m^2 minimum lot size – DPR 14.7.1.3 RD1
Residential Large Lot	7	2.8	Theoretical - 1350m^2 minimum lot size – DPR 14.9.1.3 RD2
Residential Banks Peninsula	25	11.9	Theoretical - 400m^2 minimum lot size – DPR 14.8.2.1 a. i.
Residential Small Settlement	10	6.6	Theoretical - 1000m^2 minimum lot size – DPR 14.10.2.1 a. i.
Community Housing Redevelopment Mechanism	65	40	Overlay allows up to 65 hh/ha in RS zone. Modified is based on density achieved by Kāinga Ora redevelopment projects (conservative estimate – higher densities have been achieved in some instances).

East Frame	900 households	900 households	Based on consent data for housing units and the master plan
RS - Existing Rural Hamlet Overlay	5	5.7	2000m^2 minimum lot size – DPR 14.4.3.2.1 b. ii.
RS - Peat Ground Condition Constraint	5	5.1	2000m^2 minimum lot size – DPR 14.4.3.2.1 b. ii.
RS - Stormwater Capacity Constraint Overlay	52 households	52 households	Existing allotments at June 1995 – DPR 14.4.3.2.1 b. ii.
RMD - Medium Density (Higher Height Limit and Individual Site Density) Overlay	100	60	Theoretical - Potential from RSDT and RMD modelling Modified – As per RMD, adjusted for height limit
RMD - Residential Medium Density Lower Height Limit Overlay	100	60	Theoretical - Potential from RSDT and RMD modelling Modified – As per RMD, adjusted for height limit
RH - Residential Hills Density Overlay	13	3.7	Theoretical - 765m^2 minimum lot size – DPR 14.7.1.3 RD1
RH - Residential Mixed Density Overlay – 86 Bridle Path Rd	9 households	9 households	Stated households – DPR 14.7.2.1 a. iv.
RH - Residential Mixed Density Overlay – Redmund Spur	400 households	400 households	Stated households – DPR 14.7.2.1 a. iii.
RLL - Residential Large Lot Density Overlay	3	1.9	Theoretical - 2700m^2 minimum lot size – DPR 14.9.1.3 RD2
RLL - Residential Large Lot Density Overlay Allandale	24 households	24 households	Lots identified on ODP – 8.10.13
RLL - Residential Large Lot Density Overlay Samarang Bay	8 households	8 households	Lots identified on ODP – 8.10.12
RBP - Diamond Harbour Density Overlay	16	7.4	Theoretical - 600m^2 minimum lot size – DPR 14.8.2.1 a. ii.

50

RSS - Kāinga Overlay 1 and 2	22	8.2	Theoretical - 450m^2 minimum lot size – DPR 14.10.2.1 a. v.

Selwyn

The Selwyn growth model utilises parcel-based information to determine the amount of additional capacity in the towns in the district. This breaks it down to Plan-Enabled, Infrastructure Ready, Reasonably Realised, and Feasible. Different levels of capacity recognises that the market rarely provides for housing to the densities and typologies enabled by District Plan subdivision standards and land use rules. It also accounts for the reality that there will be a range of lot sizes as a consequence of natural features, demand profiles and infrastructure needs.

The reasonably expected to be realised capacity is an estimate of the contemporary level of development that is being produced by the market within sample areas using spatial data to determine the extent to which the realised subdivision density is consistent with the underlying zones. The reasonably expected to be realised capacity outputs have been aggregated up to the TA level for the purposes of reporting. Key assumptions within the growth model are briefly summarised as follows:

Table 38: Selwyn Residential Density Assumptions

Assumption	Reasonably Expected to be Realised
Infrastructure	25%
Medium Density Residential Zone Greenfield Sites	Rolleston – 500m^2 Lincoln – 650m^2 Prebbleton – 700m^2
Medium Density Residential Zone Infill Sites	Rolleston – 300m^2 Lincoln – 300m^2 Prebbleton – 300m^2
General Residential Sites	West Melton – 700m^2
Large Lot Sites	Rolleston – 6,000m^2 Lincoln – 6,000m^2 Prebbleton – 6,000m^2 West Melton – 6,000m^2

For more information on how growth model process, see Appendix 3: Formative Model Process.

Waimakariri

Similarly to Selwyn, the Waimakariri growth model utilises parcel-based information to determine the modified or reasonably expected to be realised capacity. This adjusts the plan-enabled capacity in recognition that the market rarely provides for housing to the densities and typologies enabled by District Plan subdivision standards and land use rules. The reasonably expected to be realised capacity is an estimate of the contemporary level of development that is being produced by the market within sample areas using spatial data to determine the extent to which the realised subdivision density is consistent with the underlying zones. The reasonably expected to be realised capacity outputs have been aggregated up to the TA level for the purposes of reporting.

Table 39: Waimakariri Residential Density Assumptions

Assumption	Reasonably Expected to be Realised
Infrastructure	25%
Medium Density Residential Zone Greenfield Sites	Rangiora – 500m^2 Kaiapoi – 500m^2 Woodend – 500m^2 Pegasus – 500m^2

Medium Density Residential Zone Infill Sites	Rangiora – 300m² Kaiapoi – 500m² Woodend – 300m² Pegasus – 300m²
General Residential Sites	Oxford – 600m²
Large Lot Sites	Rangiora – 6,000m² Kaiapoi – 6,000m² Woodend – 6,000m² Mandeville – 6,000m² Ohoka – 6,000m²
Settlement Zone	Small Settlements – 1,000m²

For more information on how growth model process, see Appendix 3: Formative Model Process.

Reasonable Expected to be Realised Capacity

Table 40: Reasonably Expected to be Realised Urban Capacity

GCP Urban Capacity	Short 2021 – 2024	Medium 2021 – 2031	Long 2021 – 2051
Waimakariri	15,234	15,234	15,234
Christchurch	94,000	94,000	94,000
Selwyn	22,067	22,067	23,022
Total	131,301	131,301	132,256

7.5.3. Reasonably Expected to be Realised and Infrastructure Ready

This section summarises the actual and likely availability of development infrastructure and additional infrastructure in the short, medium, and long term, as required under Policy 3.4 of the NPS-UD. This is whether there is water supply, wastewater, stormwater, and land transport infrastructure available to support the development of residential land. Infrastructure ready (as outlined in 3.4) means the following:

Table 41: NPS-UD Infrastructure Timeframes and Implications

Timeframe	Includes
Short	Adequate existing development infrastructure is available.
Medium	Adequate existing development infrastructure is available or funded through the LTP.
Long	Adequate existing development infrastructure is available or funded through the LTP or the Infrastructure Strategy.

The infrastructure assessment considers whether any area currently zoned for residential activity over any timeframe faces a specified constraint on development. The explicit capacity of development infrastructure is difficult to do as infrastructure models are designed to meet household projections. The approach to identifying the availability of infrastructure was to determine any areas where a lack of development infrastructure or additional infrastructure would impede or prohibit the potential development of a site or sites for housing. Areas that require additional development costs, such as on-site stormwater storage capacity, were identified but not excluded from the capacity as these do not impede development directly (but do add costs). These additional costs of development will be quantified, and the impacts considered, within the housing feasibility assessment.

Generally, no zoned land is significantly impeded in such a way that would make development or intensification impossible. This is principally because land identified within the CRPS required infrastructure and therefore was programmed for servicing. Also, there are no identified infrastructure

constraints for the balance of the Living/Residential Zones that would preclude intensification to the densities prescribed in either the Selwyn or Waimakariri District Plan.

Christchurch

The assessment of infrastructure capacity for wastewater and stormwater networks, is different for intensification areas than greenfield. For greenfield areas, new infrastructure is appropriately sized and designed to service the planned scale of the new neighbourhoods. In the case of intensification (redevelopment) areas, the explicit capacity of development infrastructure is more complex to assess. Infrastructure models to date, have been based upon the application of household projections to catchments, rather than the modelling of theoretical or 'reasonably expected to be realised' household capacity. More detailed modelling will need to be undertaken to identify whether there are capacity issues to service all plan-enabled and expected capacity. In the interim, the infrastructure assessment has focused on identifying those locational areas where there is a lack of development infrastructure or feasible infrastructure solution, resulting in restrictions on connections to the Council's network, and/or obtaining of a building consent.

Wastewater - Except for a few locations, generally no zoned land is impeded in such a way that would make development impossible in the short to medium term. There are some 'spot' locations and/or sites that require alternative solutions for connections, however this is an impact on development costs (and so feasibility), not strictly land development capability. Alternative solutions (local pressure sewer system to attenuate wastewater in wet weather) enable development without exacerbating overflow issues and further compromising Council's ability to meet is consented overflow conditions.

Greenfield areas known as Highfield (1000 potential homes) and East Papanui (approximately 400 potential homes) require either the planned upgrades to be completed by Council or alternatively developer led. For the purpose of this assessment, these areas have been deemed infrastructure ready in the medium term.

Parts of Shirley and Aranui are within a vacuum sewer catchment, where there is no additional capacity for new sewer connections until a solution is developed. It is not known at this stage what the number of potential new houses are restricted until further modelling is undertaken. However, for the purpose of recording a number 600 have been estimated as constrained in the long term as neither a programme of work, nor any planned investment has been committed under the Long Term Plan, nor Infrastructure Strategy. This reduces the plan-enabled capacity by a total of 1000 households.

Water Supply - There are no water supply constraints to development within the Christchurch area, as all required major upgrades have either been undertaken in recent years or are planned to be undertaken within the next ten years in the 2021-2031 LTP. Over the next ten years a key focus for the water supply asset will involve over $200 million investment in the improvement and maintenance of the reticulation network, to reduce leakages and improve the long-term sustainability of the water supply.

Stormwater - Stormwater treatment facilities and waterway enhancement programmes will involve retrofitting existing and creating new facilities within the Avon, Styx, and Heathcote catchments. Throughout Christchurch, stormwater capacity is not identified as a significant restraint to residential development, as most sites have the ability to mitigate effects on site. Land development is therefore not precluded, rather for certain sites there will be an increased development cost associated with providing on-site mitigation infrastructure. Areas that require additional development costs, such as on-site stormwater storage capacity, were identified but not excluded from the capacity as these do not impede development directly (but do add costs).

Facilities and open space - Council's facilities include libraries, sports and recreation centres, pools, stadia, camping grounds, art gallery and museum, community centres, bus exchange and corporate accommodation. There has been extensive rebuilding and repairs of facilities post-earthquakes, resulting overall in a modern network of well-designed buildings able to cater for optimal usage and meet citizens expectations. Council's investment over the next ten years will be to complete the Te Pou Toetoe (Linwood) indoor swimming pool and community spaces; the metro Sports Facility; Hornby library, customer services and rec and sport centre; and the Canterbury Multi-Use Area. These together with the existing network will adequately support a growing population well into the future. In respect to parks and open space, there exists an extensive network of parks asset sites and facilities across the

city. Network plans are being developed to guide Council's further investment and importantly the prioritisation of new developments and upgrades to meet community needs equitably and within available resources.

Transport - Throughout Christchurch, all existing and planned urban areas have access to core transport links, corridors, and public transport. Identified areas of future growth (RNN) have led to upgrades to transport links to be programmed. These upgrades include Cashmere Rd, Lincoln Rd and Whiteleigh Ave, public transport and cycleway improvements. Areas of intensification around the city are supported through various transport programmes, notably improvements to the public transport and cycling network, which become more viable through intensification. However, growth is also likely to lead to reductions in the level of service and capacity on the transport network, which will result in increasing delays and congestion. Over the next 10 years Council is investing $551.8 million in upgrading roads, footpaths and road infrastructure, and a further $746 million on operational costs.

Selwyn

Wastewater - The East Selwyn Sewer Scheme has capacity, with additional upgrades planned and undertaken when population thresholds are met or where developers need to extend sewer mains and install lateral connections at the time of subdivision. Further, master planning and supporting Development Contribution policies are in place in the 2015-25 LTP.

Water Supply - Generally, bulk water infrastructure is planned and will be constructed as required, with developers needing to extend water mains and install lateral connections to the primary network at the time of subdivision. Further, master planning and supporting Development Contribution policies in place in the 201525 LTP. Some development areas in Lincoln, Rolleston, and Prebbleton require water supply and utility upgrades, which are programmed for upgrades by 2028. Developers have an option to progress these upgrades privately within a shorter timeframe in response to the timing and sequencing of development.

Stormwater - Generally, stormwater capacity is available or possible for all sites that have been zoned for development with an Integrated Stormwater Management System established in Lincoln.

Transport - Urban areas have access to transport links, including the Main Trunk and Midland Lines and
State Highway 1, 73 and 75. The Southern Motorway extension and Four-Laning of State Highway 1 to Rolleston has recently been completed. Future growth is enabled through progressive upgrades to transport links, which have been either undertaken or are programmed to ensure there is sufficient capacity within the strategic transport network to accommodate growth needs over time.

Waimakariri

Wastewater - Generally, there is wastewater capacity across the urban areas. Several rural-residential areas require upgrade and ongoing work to increase capacity is either underway or programmed for works.

Water Supply - Generally, there is water supply capacity. Several rural-residential areas require upgrade and ongoing work to increase capacity is either underway or programmed for works.

Stormwater - Generally, there are no stormwater constraints. Areas, such as East Rangiora and Ravenswood will require Stormwater Management Plans for development.

Transport - Generally, throughout Waimakariri, urban areas have access to transport links, including the Main Trunk (State Highway 1 and 71). The Northern and Western Corridor improvements were recently completed. Identified areas of future growth are aligned to upgrades to transport links, which have been either undertaken or programmed to integrate development in the strategic transport network.

Additional Infrastructure

Policy 10 of the NPS-UD states that councils should also engage providers of development infrastructure and additional infrastructure to achieve integrated land use and infrastructure planning. Additional infrastructure covers other providers that met a broader need, it is defined as:

- public open space;
- community infrastructure (as defined in section 197 of the Local Government Act 2002);
- land transport (as defined in the Land Transport Management Act 2003) that is not controlled by local authorities;
- social infrastructure, such as schools and healthcare facilities;
- a network operated for the purpose of telecommunications (as defined in section 5 of the Telecommunications Act 2001); and
- a network operated for the purpose of transmitting or distributing electricity or gas.

Government departments who provide development and additional infrastructure include:

- Kāinga Ora Homes and Communities as providers of public housing and partners with the development community, Māori, local and central government on urban development projects.
- Department of Conservation as providers of large public open space;
- Ministry of Social Development as providers of social infrastructure;
- Waka Kotahi as providers of land transport;
- Ministry of Education as providers of schools;
- Ministry of Health as providers of healthcare.

As part of the next steps (Phase 2) to the HCA the additional infrastructure providers will be engaged to identify whether there are any constraints to the long-term development capacity. Government departments will be involved with the development of the Greater Christchurch Spatial Plan (next Future Development Strategy) and it is through this process that any capacity issues and opportunities regarding housing, social, health and transport infrastructure will be identified, further assessments undertaken, and required responses agreed.

Reasonable Expected to be Realised and Infrastructure Ready Capacity

Table 42: Reasonably Expected to be Realised Urban Capacity

Urban Capacity	Short 2021 – 2024	Medium 2021 – 2031	Long 2021 – 2051
Waimakariri	14,914	14,914	14,914
Christchurch	94,000	94,000	94,000
Selwyn	22,067	22,067	23,022
Total	131,301	131,301	132,256

7.5.4. Feasible Capacity

The feasible calculation is based on the previously developed MBIE/MfE Feasibility Tool. Feasibility is in two stages, land development and build development. Feasible is defined in the NPS-UD as the following:

Table 43: NPS-UD Feasibility Timeframes and Implications

Timeframe	Includes
Short	Commercially viable to a developer based on the current relationship between costs and revenue.
Medium	Commercially viable to a developer based on the current relationship between costs and revenue.
Long	Commercially viable to a developer based on the current relationship between costs and revenue, or any reasonable adjustment to that relationship.

The approach to modelling commercial feasibility is based on a number of assumptions that can be altered to produce different results.

The Land Development Model uses the MBIE/MfE Feasibility Tool as its base. This outlines a range of costs to be considered in calculating the commercial viability of a development of land to a subdivided section. This calculation determines whether the section sales price is sufficient to cover the cost of development. Costs were undertaken by Harrison Grierson on behalf of the partnership, and these are outlined in the supporting documents. Land values and sales prices were sourced from QV and developers. Land Development was applied to greenfields within the district that are undeveloped, with the assumption that greenfield currently underway are feasible. The value of each land holding within a typical greenfield can vary dependent on the size of the lot and the proximity to existing urbanised areas. A standardised land value (at square metre) for each greenfield is generally not consistent across the various land parcels in each greenfield. For example, a land parcel with an existing house is generally worth more per square metre than a land parcel without a dwelling. Smaller land parcels also trend towards a higher square metre value than larger land parcels. The Build Development Model uses the MBIE/MfE Feasibility Tool as its base. This outlines a range of costs involved in building to be considered in calculating the commercial viability of building a dwelling on a section. The calculation determines whether the dwelling price is sufficient to cover the costs of development. Costs were provided by WTP on behalf of the partnership, and these are outlined in the supporting documents.
Capital values, last sales and zoning provisions from the councils and sale price information from QV.
Redevelopment sites are the existing cadastral boundaries of sites within the residential zoned areas.
The Build Development Model did not include an assessment of land development costs. All development sites were considered to be acceptable to develop for housing without the need for land development work (e.g., sites are serviced for infrastructure and do not require earthworks for stormwater attenuation), although site preparation work is assumed to be required (e.g., removal of existing dwellings and other structures, site clean-up).

Financial Data from Stats NZ[31] helps show income and expenditure and profit from land development and subdivision and house construction. In 2019, the average profit in land development was 23%, whereas for house construction it was 6.6%. These percentages have been used in the feasibility assessments.

Christchurch Feasibility Assessment

The MfE Feasibility Tool was used as the basis for assessing both redevelopment and new greenfield capacity. Land value (or purchase cost) remains a key determinate of the feasibility for greenfield development. Two approaches were taken; the first of these was to assume the rated Capital Value was a proxy for the land value. The second approach was to apply a land value calculated from examining the pattern of historic subdivision in one example greenfield area (this being the South Halswell Outline Development Plan Area – refer to Christchurch District Plan, Chapter 8 Appendix 8.10.20). The land value was then adjusted to account for the proportion of the parcel occupied by an existing dwelling and/or ancillary buildings.

The improvement value component was subtracted from the capital value of the land parcel as a whole and assigned to a smaller section encompassing the improvement. The capital value of the remainder of the land parcel then better reflected the actual land cost to developers (essentially the improvement value component of the purchase could be sold again, albeit on a smaller section thereby cancelling out some the cost). In almost all Christchurch greenfield developments, the rural dwelling and surrounds are subdivided off prior to or part of the land development. The result being that on average the land value input equated to only 75 percent of the overall recorded capital value for any one land parcel in a greenfield area.

The MfE Building Development Model is the basis for establishing the feature, attribute and value inputs into a GIS-based redevelopment model that has been used to assess feasible capacity for the existing urban area. Essentially, the GIS-based model replicates the process of the Building Development Model for each potential development site within Christchurch, taking into account the rules of the District Plan, the underlying value of the land and improvements, existing development and development costs, and then applying a series of test development typologies appropriate for the zone and based on recent development outcomes (including the sale price developers are typically setting). The outcomes of typology testing are then compared to determine which the most feasible development is, and this determines what the housing yield is for a site. The parameters for development are:

[31] https://statisticsnz.shinyapps.io/bpbench/

- Where there is more than one feasible development typology per site, the typology with the highest profit is selected to determine the housing yield.
- Development typologies assessed are based on averages of key attributes of observed development outcomes in the each assessed zone from the last two years of development activity.
- Recession plane deductions for upper-level floor space has been estimated.
- Minimum subdivision size for each zone applies (where appropriate).
- Demolition costs are based on existing building(s) footprint in each parcel and includes accessory buildings. These are estimated from building footprint data which is based on aerial photography approximations. A standard square meter cost has been applied, therefore the approach does not take into account site or building specific attributes that may increase the cost of demolition.
- Each redevelopment site is assumed to be cleared (i.e., this is not an assessment of infill development, and no existing structures are retained).
- The Technical Category of the land determines the foundation cost to apply.

For redevelopment in Christchurch within the RMD, RSDT and RCC zones, the patterns of development since the 2018 Capacity Assessment suggest the market has become more aligned with what can be delivered in the post-2016 District Plan Review zones (these being more enabling of intensification). A townhouse typology of two storey, two/three-bedroom, multi-unit homes is currently the typical development outcome for the RMD and RSDT zone, and (in a more dense and often higher form) a typical development in the RCC zone. This typology delivers consistently medium density development, well in excess of the zone minimum density for the RMD and RCC zones. The RSDT zone does not require a minimum density yield, but density outcomes are above historical yields. It has been observed (through consents) that density outcomes do tend to increase where larger and/or amalgamated sites are developed, however the development typology outcomes are broadly the same.

Sales price tends to be generally consistent between developments in the same area and has seen significant growth in recent months. For the Central City, developers are increasingly building projects with fewer car parks then the number of homes or in some cases no car parks. This has increased the overall densities being achieved, even where townhouse typologies are being used in the Central City. Developers are investing more widely across the Central City, including within the Central City Mixed Use zones (the capacity of which was not assessed in 2018) achieving similar development outcomes as for the RCC zone.

Recent patterns of development have formed the basis for the Christchurch modelled typologies assessed (see Table 46), which do differ from those tested in the previous 2018 Capacity Assessment.

Table 44: Christchurch Typology Sensitivity Tests

Zone	Typical Typology	Others Tested
RSDT	One/Two storey townhouse, 70 to 80 square meters, single carpark	Subdivision for zone minimum, detached single storey dwelling.
RMD	Two/Three storey townhouse, 70 to 105 square meters, single carpark	Low-rise, walk-up apartment (three storey)
RCC	Two/Three storey townhouse, 70 to 105 square meters one/no parking	Low-rise and mid-rise apartment (up to five storey)
CCMU	As RCC	As RCC
Other Zones	For infill and subdivision detached dwellings in new separate sites.	

The modelled feasible capacity for Christchurch has maximised feasibility within the development potential enabled by the plan. This does not in itself lead to built outcomes. Other scenarios where model inputs are reflective of real-world development outcomes, will produce a lower level of overall feasibility. It is possible that upon full redevelopment and development of urban areas, the actual realised density will fall between the reported feasible and expected calculations. Noting however, as

stated for Christchurch there have been exclusions from the assessment which if included are likely to increase capacity.

Selwyn and Waimakariri Feasibility Assessment

The Selwyn and Waimakariri growth models also assess feasibility. The model considers building costs, land values, sales revenues, and industry average profit margins. This considers feasibility of infill, redevelopment, and greenfield. Generally, this is a financial tool that tests whether development could return a profit. The feasibility assessment covers land development, greenfield buildings, and brownfield buildings.

For more information on how growth model process, see Appendix 3: Formative Model Process.

7.5.5. Summary of Feasible Capacity

Table 45: Feasible Urban Capacity

Urban Capacity	Short 2021 – 2024	Medium 2021 – 2024	Long 2021 – 2051
Waimakariri	5,950	5,950	14,450
Christchurch	94,000	94,000	94,000
Selwyn	11,550	11,550	24,100
Total	111,500	111,500	132,550

7.5.6. Take-Up

This section summaries the rates of take-up over the past 10 years as the basis to then estimate future rates of take-up. This shows net new dwellings by TA. This informs the 'reasonably expected to realised' section in two ways, providing understanding of current development, as well as understanding development that is occurring but not modelling as feasible. The 2011 earthquakes significantly affected take-up rates for Christchurch City, particularly in terms of redevelopment of the existing urban area (i.e., new dwellings achieved through intensification). Consequently, using a 10-year average take-up rates will produce abnormal results and therefore a longer range of take-up rates have been used to smooth out inconsistencies. The information below is collated and released by Stats NZ[32]. Multi-Unit contains what Stats NZ classifies as: apartments; retirement village units; townhouses; flats; and other.

Table 46: Take-Up across TAs

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Waimakariri Total	562	429	341	457	527	1,071	1,248	961	633	730	551	694	638	551	895	832
Waimakariri Standalone	526	401	312	423	478	1,045	1,127	819	577	465	524	579	587	515	839	753
Waimakariri Multi-Unit	36	28	29	34	49	26	121	142	56	265	27	115	51	36	56	79
Christchurch Total	2,381	1,286	1,250	1,492	980	1,511	2,539	4,389	3,969	3,211	2,522	2,356	2,686	2,982	4,005	5,212
Christchurch Standalone	1,305	798	840	1,071	710	967	1,868	3,115	2,303	1,914	1,475	1,248	1,305	1,480	1,612	1,755
Christchurch Multi-Unit	1,076	488	410	421	270	544	671	1,274	1,666	1,297	1,047	1,108	1,381	1,502	2,393	3,457
Selwyn Total	740	506	394	394	443	772	1,274	1,318	1,231	1,261	1,257	1,034	1,288	1,726	1,928	1,926
Selwyn Standalone	724	497	387	393	439	766	1,270	1,284	1,210	1,179	1,227	1,016	1,258	1,605	1,763	1,746
Selwyn Multi-Unit	16	9	7	1	4	6	4	34	21	82	30	18	30	121	165	180
3 TAs Total	3,683	2,221	1,985	2,343	1,950	3,354	5,061	6,668	5,833	5,202	4,330	4,084	4,612	5,259	6,828	7,970
3 TAs Standalone	2,555	1,696	1,539	1,887	1,627	2,778	4,265	5,218	4,090	3,558	3,226	2,843	3,150	3,600	4,214	4,254
3 TAs Multi-Unit	1,128	525	446	456	323	576	796	1,450	1,743	1,644	1,104	1,241	1,462	1,659	2,614	3,716

Observations – Christchurch redevelopment

Building consent data continues to show a strong uptake of redevelopment capacity in the Christchurch zones that enable intensification. This is particularly evident in the inner-suburbs, close to the Central City. The Central City has also seen development activity increase in the last two years. Consequently, most new homes supply in Christchurch is now from redevelopment rather than greenfield.

[32] https://www.stats.govt.nz/information-releases/building-consents-issued-december-2022/

Analysis of Take Up compared to Feasibility

The current take-up within the TAs shows all areas experience positive growth, it also shows why what is reasonably expected to be realised is also feasible. Additional analysis of take-up is found in section 6.1.

8. NPS-UD Requirements and Response

There are several changes to this HCA following the previous capacity work that aligns with feedback received and the change in National Policy Statement.

NPS-UD changes from NPS-UDC

This table highlights the key changes between the national policy statements and how Greater Christchurch has responded to it.

Table 47: Changes between NPS-UDC and NPS-UD

Change	Response
Implementation 3.21 seeks engagement with development sector, providers of infrastructure, and others with important information.	The partnership has commissioned a development sector survey to invite responses on capacity and future development
Implementation 3.23 seeks analysis of how planning and infrastructure decisions impact the competitiveness and affordability of the local housing market for different groups of the community.	This capacity assessment contains sections relating to monitoring, affordability, housing need, preferences, and trade-offs, influencing factors, and specific community demand such as Māori housing demand and other migrant demand. This information will help inform planning decisions.
Implementation 3.24 (1), 3.25 (2), and 3.27 (2) requires assessing demand, development capacity, and sufficiency of capacity by type and location.	This capacity assessment provides analysis of demand by territorial authority and typology and includes the competitiveness margin.
Implementation 3.24 (5) requires a range of demand projections must be produced, with the most likely projection identified for each of the short, medium, and long terms. Assumptions, reasons for projections and the most likely projection to be set out.	This capacity assessment outlines a range of projections with analysis as to what projection is most likely.
Implementation 3.25 (1) (c) and 3.26 seeks feasibility estimates of housing development capacity based on the current relationship between costs and prices, with flexibility to alter this relationship for long-term feasibility.	Feasibility assessment first uses the current relationship between costs and prices for the medium term. Long-term feasibility models potential changes in sales and costs.
Implementation 3.26 highlights options and examples to calculate housing development capacity that is feasible and reasonably expected to be realised, and ensuring transparency of methods, inputs, and assumptions.	Reasonably expected to be realised is based on current development trends to help inform what is likely to be built. Feasibility tests whether this is commercially viable.

Changes from Previous Capacity Assessments

The following table shows feedback received and how Greater Christchurch has responded to it.

Table 48: Changes

Change	Response
CEAG Memo 24th March 2020 – Appendix C	
Assessment of the most appropriate projection	There is ongoing need to check whether the chosen projection is appropriate. This capacity assessment outlines why the projection is chosen and this needs to be tested against take-up and future Stats NZ information.

Transfer of demand for smaller, multi-unit dwellings across Greater Christchurch. Does reapportioning demand change the demographic profile?	This capacity assessment does not reapportion demand rather it outlines the scale of response the FDS addresses. There needs to be care in reapportioning growth around the 3 TAs and what that means for the demographic profile. Increasing growth in one TA also needs to address the change in demographic profile this will cause.
Projected rural demand influencing urban analysis	This issue is less critical with the change from Stats NZ Area Units to Statistical Area 2. This capacity assessment looks at demand for all the 3 TAs but identifies urban demand. Rural demand provides a complete profile of the area that will help inform spatial planning. Any specific rural-residential demand that occurs in smaller areas than captured in the SA2 will require specific future investigation.
MfE Feedback on 2017 HCA	
Use of alternative projection from Stats NZ Medium Projection	The NPS-UD changed the requirement for using Stats NZ Medium Projection. This capacity assessment outlines what projection is chosen and the justification for that. Ongoing monitoring is needed, and projections or alternate scenarios can be calculated.
Feasibility assessment and sensitivity analysis	The feasibility methodology is well-documented including the assumptions on costs and prices and development. These assumptions have been sensitivity checked for potential influence on feasibility.
Take-up information linked	Take-up informs the 'reasonably expected to be realised' and offers alternate information to feasibility. Take-up continues to be monitored by each Council.
Use of Market Indicators	This capacity assessment outlines some key market indicators and discusses the trends, however, the development of a monitoring approach and its integration into the assessment needs future work.
MfE Feedback on 2021 HCA	
More information on the 'factors of attraction' and quality of life or business	Additional work has been added to Section 7.3.4
More information on assumptions underlying projections, such as migration and household size.	Additional work has been added to 7.4.1
More information on the impact of planning decisions on affordability	Additional work has been added to Section 5 and 6
More information on the impact of infrastructure on affordability	Additional work has been added to Section 5 and 6
Investigate price efficiency and implications for a competitive land market	Additional work has been added to Section 7.3.1
Further discussion on the likely impact on Māori	Additional work has been added to Section 7.3.3
Discussion on the impact of inter-regional migration on	Additional work has been added to Section 7.3.6 and 7.4.1

demand, especially post-quake, and how much house prices are a pull factor	
Analysis of location choice (demand and capacity) at a more granular geographic level	Work to show more granular level is to be completed.
More analysis of what the data and developer feedback suggest.	Additional work has been added to Section 5 and 6
Input data costs shown, including land values and sales price, and example modelling process for transparency	Examples have been added through Section 7.5

The following table outlines how the NPS-UD requirements are met. The relevant parts of the NPS-UD can be found in Appendix 1: NPS-UD Objectives and Policies.

Table 49: How NPS-UD requirements are met

NPS-UD Requirement	Where it is Met:
3.2 Sufficient development capacity for housing	Section 3
3.4 Meaning of plan-enabled and Infrastructure ready	Section 7.5.3
3.5 Availability of additional infrastructure	Section 0
3.9 Monitoring requirements	Section 7.3.1
3.10 Assessing demand and development capacity	Section 5
3.19 Obligation to prepare HBA	This report meets timeframes and demonstrates collaboration
3.20 Purpose of HBA	Section 2
3.21 Involving development sector and others	Section 7.2
3.22 Competitiveness Margin	Section 7.4.6
3.23 Analysis of housing market and impact on planning	Section 7.3
3.24 Housing demand assessment	Section 7.4
3.25 Housing development capacity assessment	Section 7.5
3.26 Estimating what is feasible and reasonably expected to be realised	Section 7.5.2 and Section 7.5.4
3.27 Assessment of sufficient development capacity for housing	Section 3

9. Further Work

The following is a list of key work to be undertaken.

Table 50: Further Work

Further Work
Show capacity and demand by sub-area
Re-visiting methodology, in terms of consistency and detail
Investigate viability of a single growth model
Additional work understanding capacity availability, especially in the short-term
Update projections against any new Stats NZ information and any alternate options
Improve monitoring and the potential of a dashboard

Appendix 1: NPS-UD Objectives and Policies

Objective 1 - New Zealand has well-functioning urban environments that enable all people and communities to provide for their social, economic, and cultural wellbeing, and for their health and safety, now and in the future.

Objective 2 - Planning decisions improve housing affordability by supporting competitive land and development markets.

Objective 6 - Local authority decisions on urban development that affect urban environments are:

a. integrated with infrastructure planning and funding decisions; and
b. strategic over the medium term and long term; and
c. responsive, particularly in relation to proposals that would supply significant development capacity.

Objective 7 - Local authorities have robust and frequently updated information about their urban environments and use it to inform planning decisions.

Policy 2 – Tier 1, 2, and 3 local authorities, at all times, provide at least sufficient development capacity to meet expected demand for housing and for business land over the short term, medium term, and long term.

Policy 10 – Tier 1, 2, and 3 location authorities:

a. that share jurisdiction over urban environments work together when implementing this National Policy Statement; and
b. engage with providers of development infrastructure and additional infrastructure to achieve integrated land use and infrastructure planning; and
c. engage with the development sector to identify significant opportunities for urban development.

Subpart 1 – Providing development capacity

3.2 Sufficient development capacity for housing

1. Every tier 1, 2, and 3 local authority must provide at least sufficient development capacity in its region or district to meet expected demand for housing:
    a. in existing and new urban areas; and
    b. for both standalone dwellings and attached dwellings; and
    c. in the short term, medium term, and long term.
2. In order to be sufficient to meet expected demand for housing, the development capacity must be:
    a. plan-enabled (see clause 3.4(1)); and
    b. infrastructure-ready (see clause 3.4(3)); and
    c. feasible and reasonably expected to be realised (see clause 3.26); and
    d. for tier 1 and 2 local authorities only, meet the expected demand plus the appropriate competitiveness margin (see clause 3.22).

3.4 Meaning of plan-enabled and infrastructure-ready

1. Development capacity is plan-enabled for housing or for business land if:
    a. in relation to the short term, it is on land that is zoned for housing or for business use (as applicable) in an operative district plan.
    b. in relation to the medium term, either paragraph (a) applies, or it is on land that is zoned for housing or for business use (as applicable) in a proposed district plan.
    c. in relation to the long term, either paragraph (b) applies, or it is on land identified by the local authority for future urban use or urban intensification in an FDS or, if the local authority is not required to have an FDS, any other relevant plan or strategy.
2. For the purpose of subclause (1), land is zoned for housing or for business use (as applicable) only if the housing or business use is a permitted, controlled, or restricted discretionary activity on that land.
3. Development capacity is infrastructure-ready if:

a. in relation to the short term, there is adequate existing development infrastructure to support the development of the land.
b. in relation to the medium term, either paragraph (a) applies, or funding for adequate infrastructure to support development of the land is identified in a long-term plan.
c. in relation to the long term, either paragraph (b) applies, or the development infrastructure to support the development capacity is identified in the local authority's infrastructure strategy (as required as part of its long-term plan).

3.5 Availability of additional infrastructure

1. Local authorities must be satisfied that the additional infrastructure to service the development capacity is likely to be available.

Subpart 3 – Evidence-based decision-making

3.9 Monitoring requirements

1. Every tier 1, 2, and 3 local authority must monitor, quarterly, the following in relation to each urban environment in their region or district:
    a. the demand for dwellings
    b. the supply of dwellings
    c. prices of, and rents for, dwellings
    d. housing affordability
    e. the proportion of housing development capacity that has been realised:
        i. in previously urbanised areas (such as through infill housing or redevelopment); and
        ii. in previously undeveloped (ie, greenfield) areas
    f. available data on business land.
2. In relation to tier 1 urban environments, tier 1 local authorities must monitor the proportion of development capacity that has been realised in each zone identified in clause 3.37(1) (ie, each zone with development outcomes that are monitored).
3. Every tier 1, 2, and 3 local authority must publish the results of its monitoring at least annually.
4. The monitoring required by this clause must relate to the relevant urban environments, but may apply more widely (such as, for example, where the relevant data is available only on a region or district-wide basis).
5. If more than one tier 1 or tier 2 local authority has jurisdiction over a tier 1 or tier 2 urban environment, those local authorities are jointly responsible for doing the monitoring required by this subpart.

3.10 Assessing demand and development capacity

1. Every local authority must assess the demand for housing and for business land in urban environments, and the development capacity that is sufficient (as described in clauses 3.2 and 3.3) to meet that demand in its region or district in the short term, medium term, and long term.
2. Tier 1 and tier 2 local authorities comply with subclause (1) in relation to tier 1 and tier 2 urban environments by preparing and publishing an HBA as required by subpart 5.

Subpart 5 – Housing and Business Development Capacity Assessment (HBA)

3.19 Obligation to prepare HBA

1. Every tier 1 and tier 2 local authority must prepare, and must make publicly available as required under the Local Government Act 2002, an HBA for its tier 1 or tier 2 urban environments every 3 years, in time to inform the relevant authority's next long-term plan.
2. The HBA must apply, at a minimum, to the relevant tier 1 or tier 2 urban environments of the local authority (ie, must assess demand and capacity within the boundaries of those urban environments), but may apply to any wider area.
3. If more than one tier 1 or tier 2 local authority has jurisdiction over a tier 1 or tier 2 urban environment, those local authorities are jointly responsible for preparing an HBA as required by this subpart.

3.20 Purpose of HBA

1. The purpose of an HBA is to:
    a. provide information on the demand and supply of housing and of business land in the relevant tier 1 or tier 2 urban environment, and the impact of planning and infrastructure decisions of the relevant local authorities on that demand and supply; and

b. inform RMA planning documents, FDSs, and long-term plans; and
c. quantify the development capacity that is sufficient to meet expected demand for housing and for business land in the short term, medium term, and long term.

3.21 Involving development sector and others

1. In preparing an HBA, every tier 1 and tier 2 local authority must seek information and comment from:
   a. expert or experienced people in the development sector; and
   b. providers of development infrastructure and additional infrastructure; and
   c. anyone else who has information that may materially affect the calculation of the development capacity.

3.22 Competitiveness margin

1. A competitiveness margin is a margin of development capacity, over and above the expected demand that tier 1 and tier 2 local authorities are required to provide, that is required in order to support choice and competitiveness in housing and business land markets.
2. The competitiveness margins for both housing and business land are:
   a. for the short term, 20%
   b. for the medium term, 20%
   c. for the long term, 15%.

Housing 3.23 Analysis of housing market and impact of planning

1. Every HBA must include analysis of how the relevant local authority's planning decisions and provision of infrastructure affects the affordability and competitiveness of the local housing market.
2. The analysis must include an assessment of how well the current and likely future demands for housing by Māori and different groups in the community (such as older people, renters, homeowners, low-income households, visitors, and seasonal workers) are met, including the demand for different types and forms of housing (such as for lower-cost housing, papakāinga, and seasonal worker or student accommodation).
3. The analysis must be informed by:
   a. market indicators, including:
      i. indicators of housing affordability, housing demand, and housing supply; and
      ii. information about household incomes, housing prices, and rents; and
   b. price efficiency indicators.

3.24 Housing demand assessment

1. Every HBA must estimate, for the short term, medium term, and long term, the demand for additional housing in the region and each constituent district of the tier 1 or tier 2 urban environment:
   a. in different locations; and
   b. in terms of dwelling types.
2. Local authorities may identify locations in any way they choose.
3. Local authorities may identify the types of dwellings in any way they chose but must, at a minimum, distinguish between standalone dwellings and attached dwellings.
4. The demand for housing must be expressed in terms of numbers of dwellings.
5. Every HBA must:
   a. set out a range of projections of demand for housing in the short term, medium term, and long term; and
   b. identify which of the projections are the most likely in each of the short term, medium term, and long term; and
   c. set out the assumptions underpinning the different projections and the reason for selecting the most likely; and
   d. if those assumptions involve a high level of uncertainty, the nature and potential effects of that uncertainty.

3.25 Housing development capacity assessment

1. Every HBA must quantify, for the short term, medium term, and long term, the housing development capacity for housing in the region and each constituent district of the tier 1 or tier 2 urban environment that is:

a. plan-enabled; and
b. plan-enabled and infrastructure-ready; and
c. plan-enabled, infrastructure-ready, and feasible and reasonably expected to be realised.

2. The development capacity must be quantified as numbers of dwellings:
   a. in different locations, including in existing and new urban areas; and
   b. of different types, including standalone dwellings and attached dwellings.

3.26 Estimating what is feasible and reasonably expected to be realised

1. For the purpose of estimating the amount of development capacity that is reasonably expected to be realised, or that is both feasible and reasonably expected to be realised, local authorities:
   a. may use any appropriate method; but
   b. must outline and justify the methods, inputs, and assumptions used to arrive at the estimates.
2. The following are examples of the kind of methods that a tier 1 local authority could use to assess the amount of development capacity that is feasible and reasonably expected to be realised:
   a. separately estimate the number of feasible dwellings (using a feasibility model) and the number of dwellings that can reasonably be expected to be realised (using building consents data on the number of sites and extent of allowed capacity that has been previously developed), for the short, medium and long term; compare the numbers of dwellings estimated by each method; then pick the lower of the numbers in each time period, to represent the amount of development capacity that is feasible and reasonably expected to be realised
   b. estimate the number of feasible dwellings or sites, and then assess the proportion of these that can reasonably be expected to be developed in the short, medium and long term, using information about landowner and developer intentions.
   c. integrate information about past development trends and future landowner and developer intentions into the feasibility model, which could mean modifying assumptions about densities, heights, and timing of development.
3. The following is an example of the kind of methods that a tier 2 local authority could use to assess the amount of development capacity that is feasible and reasonably expected to be realised:
   a. assess the number of dwellings that can reasonably be expected to be developed (using building consents data on the number of sites and extent of allowed capacity that has been developed previously), for the short, medium and long term; and
   b. then seek advice from the development sector about what factors affect the feasibility of development.
4. Different methods may be appropriate when assessing the development capacity that is reasonably expected to be realised in different circumstances, such as:
   a. in existing, as opposed to new, urban areas; and
   b. for stand-alone, as opposed to attached, dwellings.

3.27 Assessment of sufficient development capacity for housing

1. Every HBA must clearly identify, for the short term, medium term, and long term, where there is sufficient development capacity to meet demand for housing in the region and each constituent district of the tier 1 or tier 2 urban environment.
2. The requirements of subclause (1) must be based on a comparison of:
   a. the demand for housing referred to in clause 3.24 plus the appropriate competitiveness margin; and
   b. the development capacity identified under clause 3.25.
3. If there is any insufficiency, the HBA must identify where and when this will occur and analyse the extent to which RMA planning documents, a lack of development infrastructure, or both, cause or contribute to the insufficiency.

Appendix 2: Methods, Inputs, and Assumptions

The caveats and contextual considerations are as follows:

1. The modelled results provide a range of possible scenario outcomes. They are not however the exhaustive output of all scenario's possible outcomes. Other scenarios, using different model inputs may be considered and therefore the context of each scenario (the parameters of the model run) should be understood and carefully considered.
2. For the purposes of establishing a base assessment approach, the MBIE guidance recommends an approach where a commercially viable development is one that achieves a 20% profit margin using the residual valuation approach to feasibility assessment. However, as set out in this report, in reaching a conclusion on feasibility and housing sufficiency, variations to the 20% profit margin approach have been developed to better recognise local and actual market parameters. Where a 20% profit margin is reached, it is more likely that the tested development will be realised. However, this approach does not necessarily mean that development scenarios where a lesser profit margin is achieved will and are not already being realised (built).
3. Estimating a price for finished dwellings across a large range of size and typology is fraught with opportunity for error resulting in over or understating dwelling prices. Sales data provides a useful starting point but does not contain the resolution of detail, particularly around quality of build. Dwelling size is recorded in sales data but again this is only an indicative measure that does not account for shared space or how a dwelling may be set out (e.g. to determine the number of bedrooms).
4. Build costs have been estimated and applied to all developments. In reality, the square metre build costs will vary within typologies as well as between typologies. For example, all other factors begin equal, the relationship between wall area and roof area is such that an apartment block on a regular shaped square site will be cheaper to construct than a similarly sized apartment block on an irregular shaped or thinner, rectangular shaped site. As modelled, the feasibility assessment cannot take site shape into account, only site size. To do so would require a more complex spatial model and further work to estimate a wider range of estimated costs to match a much wider variety development typologies to match different sites.
5. Building costs used in the feasibility model are based on those from Quarter 4 2020 (being the most up-to-date costs at the time the redevelopment capacity assessment work was commenced in early 2021). It is acknowledged that in the first half of 2021 the costs of some construction materials have increased significantly and therefore the feasibility of some developments may have changed. Land development costs used in the greenfield models were assessed more recently and do partially reflect the costs inflation of 2021 (while noting the cost inflation continues to be an issue for the construction industry)
6. The skills, attributes and capacity of the developer are also a significant factor in development. The model does not differentiate across different scales of development companies or account for different types of construction techniques or processes that a developer may be able to bring to a project. Some developers may be able to reduce or minimise certain costs where economies of scale may be realised or some functions are undertaken in-house, in so doing helping to reduce fees or professional costs. Other developers may be in the position to minimise borrowing costs or minimise the additional cost of capital that must be applied to various components of development through, for example, the minimisation of contingencies through project management and cost controls. Ultimately, these factors may translate into a reduced profit margin expectation at project outset, i.e., a particular project may be feasible for one developer, but not for another.
7. The demand methodology relies upon Stats NZ unconstrained population projections where externalities such as planning interventions, capital works improvements, Government policy, unforeseen global and social change and future technologies are unable to be factored into the 30-year projections.

In respect to Christchurch only:

1. The model is largely a financial tool that uses some spatial attributes of sites to determine the value of some model inputs. It is a two-dimensional assessment that does not account fully for the effects of three dimensional development constraints. These include, for example, the effects of slope across a development site or between development sites. The impact of slope

is particularly significant for development sites in the Residential Hills and Residential Banks Peninsula zones. Consequently, the feasible capacity results for the Port Hills and Lyttelton Harbour study area divisions should be considered to have a significant margin of error. The effect of recession planes has been estimated using a simplified spatial modelling approach.

2. The analysis has not been able to consider likely improvements to commercial feasibility achieved through site amalgamation and the use of the Community Housing Redevelopment Mechanism (which provides for medium density developments across the city where it meets certain criteria). Comprehensive developments (which have and continue to be developed) on larger sites typically yield a higher density of houses while allowing for some efficiencies in land development and build costs. This assessment has also not assessed the commercial viability of minor residential units and older persons housing units, which are enabled in most Christchurch residential zones.

Appendix 3: Formative Model Process

Capacity Assessment – Plan Enabled, Infrastructure Ready, Reasonably Realised, Feasible

The capacity assessments used in this profile are produced from our proprietary Geospatial Property Model ("GPM"). The GPM provides estimates of the amount of additional dwelling and business floorspace that can be developed on each property within the urban areas of the district. The PSM applies a two-stage process, involving a first stage of GIS processing of properties to establish the nature of each property and a second stage that estimates the different types of capacity (as required in the National Policy Statement on Urban Development).

For stage 1, a geospatial analysis was conducted to draw together data for all the properties within the urban areas that could be used for residential and business activities. The geospatial analysis had the following steps:



- **Urban Land**: extract land that is currently zoned urban or expected to be zoned urban. A spatial join between LINZ primary parcels (which is a complete and unique record of all land) and the District Plan zones and any proposed new urban areas. The output from this step is a set of parcels that can be used for urban activities.
- **Developable Urban Land**: remove land that cannot be used for residential and business activities, which includes roads, waterways, openspace, reserves, walkways, rail lines, cemeteries, places of worship, special purpose activities (universities, schools, military, ports, airports, hospitals, etc). The output from this step is a set of parcels that are developable for residential and business activities.
- **Developable Urban Properties**: establish the nature of the activity that is currently located on each developable urban property. Spatially join data to each property, which includes building footprints, rateable property, building consents, and land use surveys. This step also included both desktop and field trip validation of the data sets, with a focus on new activity in known development areas – both business and residential. The output from this step is a set of properties that are developable for residential and business activities, along with existing activities.

The Developable Urban Properties are a critical element of the assessment as it forms the baseline from which the Capacity Assessment is conducted. Much of the processing conducted in the Capacity Assessment is focused on ensuring that information recorded for each of the Developable Urban Properties is accurate and contemporary.

For stage 2, the assessment calculates the different types of capacity as required under the NPSUD which includes Plan Enabled, Infrastructure Ready, Reasonably Realised, and Feasible. The following steps were used to estimate each of the capacity types:

- **Plan Enabled**: applies the District Plan rules to establish the maximum theoretical capacity that can be developed on each urban site, which includes height limits, setbacks, minimum lot size, etc.
- **Infrastructure Ready**: draws from Council's infrastructure information and planning to establish eh capacity that will be serviced.
- **Reasonably Realised**: draws from recent developments, both consents and 224c subdivisions to establish the development patterns that are being realised by the market.



- **Feasible**: is calculated using building cost, land values, and sales revenue information, along with industry average profit margins. The modelling was conducted for intensification, infill, and greenfield developments.

The output of the Capacity Assessment is a property-level estimate of the potential development that could be accommodated in the urban parts of the District. This includes capacity estimates for the short-medium term and long term, as required in the NPSUD.

A key benefit of the Inform Capacity Profile is that users can readily input changes and generate new up-to-date outputs. While the Capacity Assessment has been developed using the best available information, it is important to understand that aspects can and will change in the future. The Inform Capacity Profile allows for flexibility, either in terms of the ability to modify the planning rules in the "Assumption" tab or directly modify specific properties (e.g. change zone).

Capacity for Growth Model

The Capacity for Growth Model ("CFGM") compares the expected demand for dwellings and business floorspace with the supply within the urban parts of the district, to establish whether there is sufficient capacity to accommodate the expected growth. The demand is drawn from the Formative's Population and Economic profile, while the supply is drawn directly from the Capacity Assessment. The CFGM applies a two-stage process, involving a first stage that converts demand to types and locations within the urban areas and a second stage that assesses whether there is sufficient supply to accommodate the demand (as required in the NPSUD).

The first stage is to assess and convert the demand into key typologies and locations within the urban areas. In summary, this stage takes the demand from Formative's Population and Economic profile and converts it into typologies and locations, which can then be compared to the Capacity Assessment. The following steps were applied in the conversion:

- **Dwelling demand**: the total dwellings are converted into types of dwellings, standalone and attached using a set of assumptions – which have been set as baseline preferences observed in the census and can be varied to allow the user to test different scenarios. These dwellings are then allocated spatially to urban areas in the District based on the observed patterns in building consents, which can be varied to allow the user to test different scenarios.
- **Business demand**: the demand for business land is converted into types of land commercial, retail and industrial, using the observed preferences for each industry for different types of land. The demand is then allocated spatially to urban areas in the District according to either dwelling growth (retail and commercial) or according to available capacity (industrial).

The output of this step is detailed demand by typology and location, for both dwellings and business land.

The second stage is to assess the sufficiency of the supply to meet demands, which compares the demand from the first stage with the supply from the Capacity Assessment. The CFGM applies the Competitiveness Margin, as defined in the NPSUD, which provides a measure of the minimum amount of dwellings and business land that is required to be 'Sufficient' – i.e. expected demand plus the Competitiveness Margin.

Next, the CFGM assessment compares the capacity that is feasible for each typology to the number of dwellings or business land to expected demand plus the Competitiveness Margin. In any case where the demand plus the Competitiveness Margin is greater than the supply of feasible capacity the model notes that there is insufficient capacity. The key output of this assessment is to show when and where there may be a need for more supply of developable land within the urban areas.

Glossary

Competitiveness Margin	A margin, over and above the expected demand is required in the NPSUD to support choice and competitiveness in housing and business land markets. The short-medium term is defined as 20% above expected demand, while the long term is defined as 15% above expected demand.
Feasible	This means development that is commercially viable to a developer based on the relationship between costs and revenue. The short-medium term is defined as the current relationship (i.e. no inflation), while the long term is identified by applying an adjustment for expected changes in costs and revenue.

Geospatial data	combines location information (coordinates) and attribute information (the characteristics) for features, in this case, land and buildings.
GIS	A geographic information system (GIS) is a system that creates, manages, analyses, and maps all types of geospatial data. GIS can be used to establish patterns, relationships, and geographic context.
Infrastructure ready	The development activity that can be accommodated by infrastructure. The short-medium term is defined as existing or funded infrastructure, while the long term is identified in the Infrastructure strategy.
Long Term	Covers two decades after the Short-Medium-term.
Plan Enabled	The development activity that can in theory occur on a property. This means all activities that are permitted, controlled or restricted within the District Plan. The short-medium term is defined in the Operative or Proposed District Plan, while the long term is identified in the Future Development Strategy.
Property	A parcel of land, that can contain one or more premises or buildings. There is a one-to-one link between land and properties.
Reasonably Realised	The development activity that is generally achieved by the market, which is based on information from past development trends which show modifying densities and heights, as compared to the rules in the District Plan. The intensity of development achieved by the market tends to be lower than what can in theory be developed.
Short-Medium Term	Covers the coming decade, where the Short term is the coming three years and the Medium-term is the following seven years.
Sufficient	Occurs when there is at least enough capacity to meet the demand (plus the competitiveness margin) and for the short-medium and long terms. For housing, sufficiency includes of existing and new urban areas and standalone and attached dwellings. For business land sufficiency includes by business sector – commercial, retail and industrial.

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Plan Enabled and Reasonably Realised Capacity

The capacity model draws from the District Plan rules to establish the maximum theoretical capacity that can be developed on each urban lot, which includes height limits, setbacks, minimum lot size, etc. This assessment is conducted using a GIS spatial analysis, which models infill, redevelopment and greenfield potential and is referred to as 'Plan Enabled' capacity.

For infill development the model assesses whether an additional building platform can be fit within the lot and whether there is potential to provide a driveway. The assessment uses building outlines as compared to the land to establish if there is sufficient room for a new building platform and if a driveway can be provided for the potential building platform. This assessment does not account for land uses that may preclude accessway or building platform, for example, pools, gazebos, sheds, gardens, trees, etc which may mean that infill is not possible. There is no data available for these other constraints, and therefore they can not be considered in the model.

For redevelopment the model assesses the maximum amount of development that can be achieved assuming that existing buildings are removed. This assessment applies the minimum lot size and rounds down to the nearest whole number. The resulting redevelopment capacity is then reduced to account for the existing dwelling(s) to provide a measure of net additional capacity. The model assesses each lot in isolation and does not assess the potential development opportunity from the amalgamation of multiple lots.

For greenfield development, the model also measures the maximum amount of development that can be achieved on the land. The assessment removes a proportion of the land for non-developable uses, such as roads, parks, and other infrastructure which is assumed to be a quarter of the land.

Importantly, for the plan-enabled capacity assessment, the requirements set out in the Housing Enabling Act have resulted in a substantial increase in capacity within the residential parts of the urban areas. However, much of this capacity will not be developable in the coming decades as there is insufficient demand and the market is unlikely to develop to the level enabled in the residential zones. Generally, developers do not achieve the maximum lot densities enabled within zone, which means that the theoretical plan enabled capacity in each zone represents an upper limit on potential development that could be achieved.

The model applies 'Reasonable Realisable' development densities which are based on recent development activity within the zones. For example, a hypothetical town with greenfield areas may have seen recent developments with a density that is lower than plan enabled. The model then applies this realised density to establish the amount of density that could be achieved. The same method is applied to existing urban areas, where the density of recent brownfield developments are used to set the realised density. The setting of the Reasonable Realisable assumptions have been reviewed by council and can be modified as densities change. It is likely that the development densities which are

achieved in each zone will continue to increase in the future and that the 'Reasonable Realisable' development densities will need to be reviewed and increased accordingly.

Commercially Feasible Capacity

The commercial feasibility of capacity is calculated using building cost[33], land values[34], and sales revenue information[35], along with industry average profit margins[36]. The modelling was conducted for infill, redevelopment, and greenfield developments.

Broadly, the model is similar to most feasibility tools – i.e. it tests whether a commercial developer could purchase the land, invest money to undertake development and then on-sell at a price that will return sufficient profit. The nature of this process is the same as for most feasibility models – i.e. simply a financial or accounting assessment of costs and revenues to establish whether a return is sufficient to warrant investment.

Importantly, it is not possible to model every type of developer or development type. The model is defined to test a subset of potential developments, which means that it will not provide a full picture of all the types of development that could occur in an urban area.

For example, the modelling does not assess the feasibility of Retirement Care, Government (Kāinga Ora), Community providers, and Private builds. Also the modelling assesses the outcome for the average commercial developer, which does not account for developers that are different from the average.

Also, while the test covers a reasonable range of dwelling types (63 combinations), it does not cover all potential outcomes that will be achieved in the market. The modelling tests the following development types:

- Land Development, which is subdivision of greenfield land to sell as build ready lots.
- Greenfield Building, which tests three typologies (detached, attached and townhouses), three dwelling sizes (large, medium and small) and three build qualities (premium, average and budget).
- Brownfield Building, which tests four typologies (detached, attached, townhouses and apartments), three dwelling sizes (large, medium and small) and three build qualities (premium, average and budget).

It is likely that there will be types of dwellings that are not modelled but which are feasible. Notwithstanding the coverage of the modelling, this method is likely to provide an understanding of the feasibility for most of the development in the urban area.

[33] Harrison Grierson (2021) NPSUD Input Review – Update: Land Feasibility calculator Inputs. WTP (2021) NPSUD Input Review – Update: Build Feasibility calculator Inputs.
[34] Selwyn District Council (2021) Rateable Values 2019.
[35] Quotable Value (2021) Residential Sales Records.
[36] Statistics New Zealand (2021) Business Performance Benchmarker.

As a hypothetical example, before a developer decides to buy and develop a lot of land they will undertake an assessment of whether any development option would yield a profit. They will need to consider the cost of the land (including the potential forgone capital value of any existing dwellings), the expected costs associated with building the new dwellings, the sale price that could be achieved for the dwellings, and finally the risk/profit margin that they need to cover to make the development viable.

For example, it may be that the developer would need to pay $600,000 for the land (including existing buildings), they then need to expend $900,000 to build three new dwellings, and those dwellings are expected to sell for $510,000. This will mean that the cost of the project will be $1.5 million and the revenue would be $1.53 million, which would mean that there is a small profit ($30,000). This small profit would not be sufficient to cover the developers risk, therefore the development would not go ahead. However, developers will assess multiple options, and only one needs to be commercially feasible.

The example above is a simplification of the model, as the assessment in the model includes 28 types of building costs across 63 combinations of developments, along with price points for each town in the District. Also, the assessment is conducted for the coming three decades.

This means that the number of tests, and financial data within each test, in combination represents a large amount of information. However, this complexity is a function of the market, which is inherently multifaceted. Finally, the model assumes that the most profitable option is developable, and does not include other potentially viable options.

Greater Christchurch Partnership

Te Tira Tū Tahi
One Group, Standing Together

Business Development Capacity Assessment

April 2023

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Glossary

The following table defines commonly used acronyms and abbreviations in this document.

Term	Definition
BCA	Business Capacity Assessment
CCC	Christchurch City Council
ECAN	Environment Canterbury / Canterbury Regional Council
FDS	Future Development Strategy
GC	Greater Christchurch
GCP	Greater Christchurch Partnership[1]
HBCA	Housing and Business Development Capacity Assessment
HCA	Housing Capacity Assessment
LA	Local Authority (city, district and regional councils)
LTP	Long Term Plan
NPS	National Policy Statement
NPS-UD	National Policy Statement on Urban Development
NPS-UDC	National Policy Statement on Urban Development Capacity
ODP	Outline Development Plan (in Christchurch District Plan)
PEL	Property Economics Limited
RMA	Resource Management Act
RPS	(Canterbury) Regional Policy Statement
SDC	Selwyn District Council
TA	Territorial Authority (city and district councils)
UDS	Urban Development Strategy
WDC	Waimakariri District Council

[1] Environment Canterbury, Christchurch City Council, Selwyn District Council, Waimakariri District Council, Te Rūnanga o Ngāi Tahu, New Zealand Transport Agency, Canterbury District Health Board, Greater Christchurch Group – the Department of Prime Minister and Cabinet, Regenerate Christchurch.

1. Executive Summary

This Business Development Capacity Assessment (BCA) has been prepared by the Greater Christchurch Partnership through the member Councils in the Partnership (Christchurch City, Selwyn District and Waimakariri District Councils) and fulfils the requirements of the National Policy Statement on Urban Development (NPS-UD) released by Government in 2020, as well as informing the Greater Christchurch Spatial Plan (GCSP).

The overall objective of the capacity assessment is to provide a comprehensive and robust evidence base to inform spatial planning decisions for Greater Christchurch, including the Future Development Strategy (met through the GCSP). The assessment will be updated at least every three years to inform Future Development Strategies, Long Term Plans, and Infrastructure Strategies.

The Partnership has been working collaboratively for over a decade to foster and manage growth in the Greater Christchurch area, including as part of earthquake recovery. The impacts of the Canterbury earthquakes during 2010 and 2011 and the recovery and regeneration activity that has followed, presents unique circumstances for the Greater Christchurch area that need to be considered as part of this capacity assessment.

This capacity assessment concludes that the Partner Councils and other infrastructure providers are well placed in terms of planning for urban growth and providing sufficient business development capacity to meet projected needs in Greater Christchurch, at least over the medium term (10 years) and to a large extent over the longer term (to 30 years). This is particularly the case in terms of industrial land supply.

This BCA builds on and updates the previous BCA completed in 2018. Any limitations of not adopting a single growth model for the Greater Christchurch area have sought to be overcome by working collaboratively to understand and agree each other's methodologies. In combination, the result is a bottom-up approach to assessing business land needs in Greater Christchurch (i.e., assessment at TA level to aggregate up to the Greater Christchurch sub-regional area).

Industrial Sufficiency

An analysis has been undertaken of the capacity (supply) enabled through district plans and the Canterbury Regional Policy Statement, as well as an assessment of whether that supply is serviced or planned to be serviced by infrastructure and is suitable to develop. Partner Councils agreed that it was appropriate to establish capacity based on the level of development that was likely to be undertaken (based on historical trends) rather than assess the maximum theoretical development capacity that was plan-enabled.

For Greater Christchurch, the assessment identifies that there is likely to be sufficient and serviced industrial land supply for the next 30 years and beyond[2]. That does not necessarily mean that all plan-enabled capacity (in terms of land extent) is serviced, but that sufficient opportunities exist to meet projected needs.

Industrial Medium Term

Area	Feasible Capacity	Demand with Margin	Surplus / Shortfall
Waimakariri	32ha	31ha	1ha
Christchurch	663ha	36ha	627ha
Selwyn	377ha	131ha	246ha
Total	1,073ha	198ha	874ha

Industrial Long Term

Area	Feasible Capacity	Demand with Margin	Surplus / Shortfall
Waimakariri	102ha	79ha	23ha
Christchurch	663ha	119ha	544ha
Selwyn	425ha	347ha	78ha
Total	1,190ha	545ha	645ha

[2] Based on a capacity of total vacant land (whole and part sites included)

For Christchurch, a significant surplus of industrial land exists with short term land sufficiency amounting to 627 hectares and over the long term, there is 544 hectares of land sufficiency at a city-wide scale. Demand for industrial land is modelled to decrease over the long term due to global economic trends, and as a result the total zoned supply of 778 hectares within the City is not expected to be fully utilised. The City will continue to monitor economic trends to determine the most appropriate use of the surplus industrial zoned land.

For Selwyn, the modelling indicates that there may be additional capacity of around 246 hectares of industrial land in the medium term and capacity of 78 hectares in the long-term. This is largely due to recently approved private plan changes. Capacity is influenced by a number of factors that need to be evaluated on an ongoing basis, including the regular monitoring of population growth and land take up. Infrastructure availability has not been identified as an immediate constraint to developing the identified plan-enabled commercial areas in Selwyn District.

For Waimakariri, the modelling indicates that there may be additional capacity of around 1 hectare of industrial land in the medium term and 23 hectares in the long term. Capacity is influenced by a number of factors that will need to be evaluated on an ongoing basis, including the regular monitoring of population growth and land take up. As in Selwyn, infrastructure availability has not been identified as an immediate constraint to developing the identified plan-enabled commercial land areas in the Waimakariri District.

Commercial Sufficiency

For Greater Christchurch, the assessment identifies that there is not likely to be sufficient and serviced commercial land supply for the next 30 years and beyond[3].

Commercial Medium Term

Area	Feasible Capacity	Demand with Margin	Surplus / Shortfall
Waimakariri	36ha	12ha	24ha
Christchurch	102ha	85ha	17ha
Selwyn	19ha	18ha	1ha
Total	157ha	115ha	42ha

Commercial Long Term

Area	Feasible Capacity	Demand with Margin	Surplus / Shortfall
Waimakariri	63ha	32ha	31ha
Christchurch	102ha	212ha	-110ha
Selwyn	30ha	50ha	-20ha
Total	195ha	294ha	-99ha

Land demand and supply for commercial activities in Christchurch paints a different picture, with the assessment concluding that there is sufficient commercial land supply in the Christchurch area over the short and medium term but an estimated shortfall of 110 hectares over the longer term[4]. The focus for the Greater Christchurch Spatial Plan will be to determine what response (if any) may be required to address these longer-term commercial space requirements and to address identified limitations with infrastructure availability. However, this assessment concludes that given the significant quantum of older industrial land in and around the central city, there exists plenty of opportunity for redevelopment of this land for commercial activities, as industrial activities are naturally displaced to outlying zones, particularly in the south and north of the city.

For Selwyn, the modelling indicates that there is capacity of 1 hectare of commercial land in the medium term and a shortfall of 20 hectares in the long-term. The medium-term only considers wholly vacant land supply[5], if 'Vacant Potential supply'[6] is included, this would improve the medium term sufficiency though relies on developers making more optimal use of the available land. Capacity is influenced by a number of factors that

[3] Based on a capacity of total vacant land (whole and part sites included)
[4] Based on historical average building heights and total vacant land supply (i.e., whole and part vacant sites and vacant floorspace)
[5] Vacant supply includes the properties that have no building footprint or floorspace at 2016
[6] Properties that have low levels of floorspace and for which capacity has been identified based on their redevelopment potential

need to be evaluated on an ongoing basis, including the regular monitoring of population growth and land take up. Infrastructure availability has not been identified as an immediate constraint to developing the identified plan-enabled commercial areas in Selwyn District.

Regarding land demand and supply for commercial activities in Waimakariri District, there is projected to be capacity of around 24 hectares over the medium term and 31 hectares in the long term. Further work considering how to use existing under-utilised commercially zoned land (including intensification within Rangiora and Kaiapoi) will be considered through the GCSP.

2. Context

2.1 Introduction

National Policy Statements are issued by the Government to provide direction to local authorities on matters of national significance that contribute to meeting the purpose of the Resource Management Act 1991 (RMA). The National Policy Statement on Urban Development 2020 (NPS-UD) aims to ensure urban areas are well-functioning and meet the changing needs of diverse communities[7]. This is achieved by directing local authorities to provide for sufficient development capacity to meet expected demand over the short (3 years), medium (3-10 years) and long terms (10-30 years)[8].

'Development capacity'[9] is defined in the NPS-UD as the capacity of land to be developed for housing or business, based on the zoning, objectives, policies, rules, and overlays that apply in the operative District Plan and the provision of adequate development infrastructure to support development of the land. This development could be expansions to the urban form of townships through development of 'greenfield' sites and/or intensification or redevelopment of existing neighbourhoods or commercial and industrial areas. Sufficient development capacity is necessary for urban land and development markets to function efficiently to meet anticipated population growth and community needs.

The NPS-UD defines the objectives or outcomes anticipated including:

- Well-functioning urban environments that enable people and communities to provide for their well-being and health and safety (Objective 1);
- Improvements in housing affordability (Objective 2);
- Urban environments that develop and change over time in response to the diverse and changing needs of people, communities and future generations (Objective 4);
- Planning decisions take into account the principles of the Treaty of Waitangi (Objective 5);
- Integration of urban development with infrastructure planning and funding (Objective 6);
- Robust and up to date information to inform decisions (Objective 7);
- Responsive planning (Objective 6); and
- Urban environments support a reduction in greenhouse gas emissions and are resilient to the current and future effects of climate change (Objective 8).

Key deliverables of the NPS-UD include:

- Completion of a Housing and Business Development Capacity Assessment (this project);
- Setting of Housing bottom lines; and
- Preparation of a Future Development Strategy (FDS) to demonstrate how a territorial authorities intend to achieve a well-functioning urban environment and provide at least sufficient development capacity over the next 30 years to meet expected demand. The FDS will set out the broad locations in which development capacity will be provided over the long-term in both new Greenfield areas and through intensification opportunities, the infrastructure required to support or service that capacity along with the general location of corridors and other sites required to provide it, and any constraints on development.

2.2 Greater Christchurch Context

Greater Christchurch is the largest urbanised area in the South Island. Christchurch is New Zealand's second largest city, and the sub-region is home to 80% of the Canterbury region's population (44% of the South Island population). Christchurch Airport and Lyttelton Port of Christchurch are respectively the principal hubs for international visitors and freight, emphasising the sub-region's importance as a strategic regional centre and economic gateway. This has been boosted in recent years through the creation of inland ports at the I-Zone southern business hub in Rolleston.

The Greater Christchurch Partnership (GCP) has worked collaboratively for more than a decade on planning and managing growth and urban development in Greater Christchurch to support the long-term needs of our people and communities. In this context, the collaborative work undertaken through the Partnership has

[7] https://www.hud.govt.nz/urban-development/national-policy-statement-on-urban-development-nps-ud/
[8] Policy 2 of the NPSUD
[9] See definition in NPSUD (page 6)

primarily focused on the creation of key planning documents that set the long-term direction for Greater Christchurch, and enable consistent, effective, and efficient decision making across partner organisations.

In June 2020, the GCP agreed to prepare Greater Christchurch 2050 to set a new strategic direction for Greater Christchurch. Through Greater Christchurch 2050, a new strategic framework has been drafted following a current state assessment of intergenerational wellbeing in Greater Christchurch and extensive consultation with the community and stakeholders about their aspirations and priorities for the future.

The next step in contributing to the aspiration set out in the Greater Christchurch 2050 Strategic Framework is the preparation of a Greater Christchurch Spatial Plan (GCSP), which will be the first major reconsideration of Greater Christchurch's urban form since the development of the Urban Development Strategy in 2007 and will look to take into account the new strategic direction of Greater Christchurch 2050 and the national policy context.

The GCSP will:

- Determine the most effective and appropriate urban form for Greater Christchurch to give effect to the strategic direction set through Greater Christchurch 2050, and therefore contribute to the vision and outcomes sought for Greater Christchurch (including the aspirations of hapū and iwi in Greater Christchurch).
- Align with the Government's Urban Growth Agenda objectives and provide the basis for a joint work programme that would be delivered through an Urban Growth Partnership for Greater Christchurch.
- Satisfy the requirements of the National Policy Statement on Urban Development for partner councils to jointly prepare a Future Development Strategy for Greater Christchurch (which can be treated as part of a spatial plan) in time to inform 2024 Long Term Plans.
- Provide the basis for any regional spatial planning that may need to be undertaken at the Canterbury level in the future, noting the Resource Management Review Panel's recommendations for regional spatial strategies and the Governments Resource Management Reform work.
- Develop a shared, evidence based spatial view of the future of Greater Christchurch that better integrates land use and infrastructure, provides certainty about the future to guide and stimulate investment, and enables councils to undertake more detailed planning at the local level.

2.3 Housing and Business Capacity Assessments

The NPS-UD requires Tier 1 local authorities to prepare a Housing and Business Development Capacity Assessment (HBA) every three years. In terms of business land, the local authorities must:

a) "…estimate, for the short term, medium term, and long term, the demand for each business sector for additional business land in the region and each constituent district of the tier 1 urban environment"[10]; and

b) "the development capacity …to meet expected demand for business land for each business sector, plus the appropriate competitiveness margin; and (b) of that development capacity, the development capacity that is: (i) plan-enabled; and (ii) plan-enabled and infrastructure-ready; and (iii) plan-enabled, infrastructure-ready, and suitable for each business sector"[11].

The local authorities must then identify whether there is sufficient development capacity for the short, medium and long-term, and where there is any insufficiency, the HBA must *"identify where and when this will occur and analyse the extent to which RMA planning documents, a lack of development infrastructure, or both, cause or contribute to the insufficiency"*[12].

This will then inform the setting of Housing Bottom Lines and a Future Development Strategy, both required under the NPS-UD.

[10] 3.28(1) of the NPSUD
[11] 3.29(1) of the NPSUD
[12] 3.30(3) of the NPSUD

2.4 Scope and Interpretation

Development Capacity is defined in the NPS-UD as the capacity of land to be developed for housing or for business use, based on:

a) the zoning, objectives, policies, rules and overlays that apply in the relevant proposed and operative RMA planning documents; and
b) the provision of adequate development infrastructure to support the development of land for housing or business use.

The local authorities have agreed the framework for assessing what is included as Development Capacity for the purpose of this BCA. This includes the following:

- land zoned for business activities in the urban areas of Christchurch City and townships within the boundary of the Greater Christchurch boundary;
- 'greenfield priority areas - business' as identified in the Canterbury Regional Policy Statement 2016 (CRPS) for Greater Christchurch (Chapter 6);

It has also been agreed that the assessment of development capacity should exclude:

- land within the Projected Infrastructure Boundary (as shown on Map A of the CRPS) that is not zoned or identified as a greenfield priority area for business activities; and
- land outside the Projected Infrastructure Boundary.

It should be emphasised from the outset that the three territorial authorities are at different stages in terms of reviewing their district plans. CCC completed a review of their District Plan, which was made fully operative in December 2017. This review zoned significant areas of commercial and industrial land to accommodate the projected needs over the plan period and beyond. As part of this review, CCC zoned all land identified in the CRPS as Greenfield Priority Areas for Business, except for two areas where development constraints could not be satisfactorily addressed to be zoned.

SDC and WDC have both notified their District Plans. Notwithstanding the stage of these reviews, SDC and WDC have zoned all of the GPAs identified for business activities, excluding the site of the future Lincoln hub (Refer to section 2.8 for an explanation. This has enabled the capacity assessment to be based on established business zonings that are consistent with the Greater Christchurch Urban Development Strategy, Land Use Recovery Plan and related provisions in Chapter 6 of the CRPS or plan changes approved through the framework enabled within the NPS-UD.

Some additional capacity is included from private plan changes. SDC has included additional commercial capacity within PC64 (approved through COVID19 Fasttrack) and industrial capacity in PC66 and PC80.

2.5 Engagement

The NPS-UD anticipates engagement in preparation of the HBA, with Policy 10 of the NPS-UD requiring engagement with the development sector to identify significant opportunities for urban development. Section 3.21 goes onto state as follows:

"In preparing an HBA, every tier 1 …local authority must seek information and comment from (a) expert or experienced people in the development sector; and (b) providers of development infrastructure and additional infrastructure; and (c) anyone else who has information that may materially affect the calculation of the development capacity".

With regard to the development sector, the partner councils identified parties most actively involved in the development sector and significant landowners and asked these parties to undertake a market demand and intentions survey. Forty-one developers, landowners and some involved in the real estate sector completed an online survey in late June/early July 2021. They responded to questions about their views on the demand and supply of land for residential and business development within the Greater Christchurch area, supply issues or barriers to development, and development intentions and possible timing for these. The low response rate to the survey means it is difficult to draw informed conclusions, however, there are some clear, common views expressed across the survey that reflect some elements of the development sector's interests and opinions. A more detailed summary and analysis of the responses is provided in a separate supporting report. In addition, the partner councils have engaged with key landowners to understand their intentions and understanding of future growth.

For Selwyn, the key feedback was that demand for commercial land is limited and has not necessarily grown with population growth. Business growth also may not translate into floor space growth as online retail has increased, especially as a response to Covid-19. This means prices have not increased significantly either. Industrial growth has been largely around the inland ports, which is caused by the regional and national demand rather than district growth. Feedback from developers outline where land should be provided, with a focus on Rolleston and a little less in Lincoln.

With regard to the infrastructure, the partner Councils have engaged with infrastructure providers in order to update information on infrastructure to inform the assessment of whether plan enabled capacity is infrastructure ready.

2.6 Study Area

The study area is the extent of the Christchurch City, Selwyn District, and Waimakariri District, having been expanded beyond the Greater Christchurch boundaries for the 2018 BCA. The basis for doing so is described in Section 2 of the 2021 Housing Capacity Assessment.

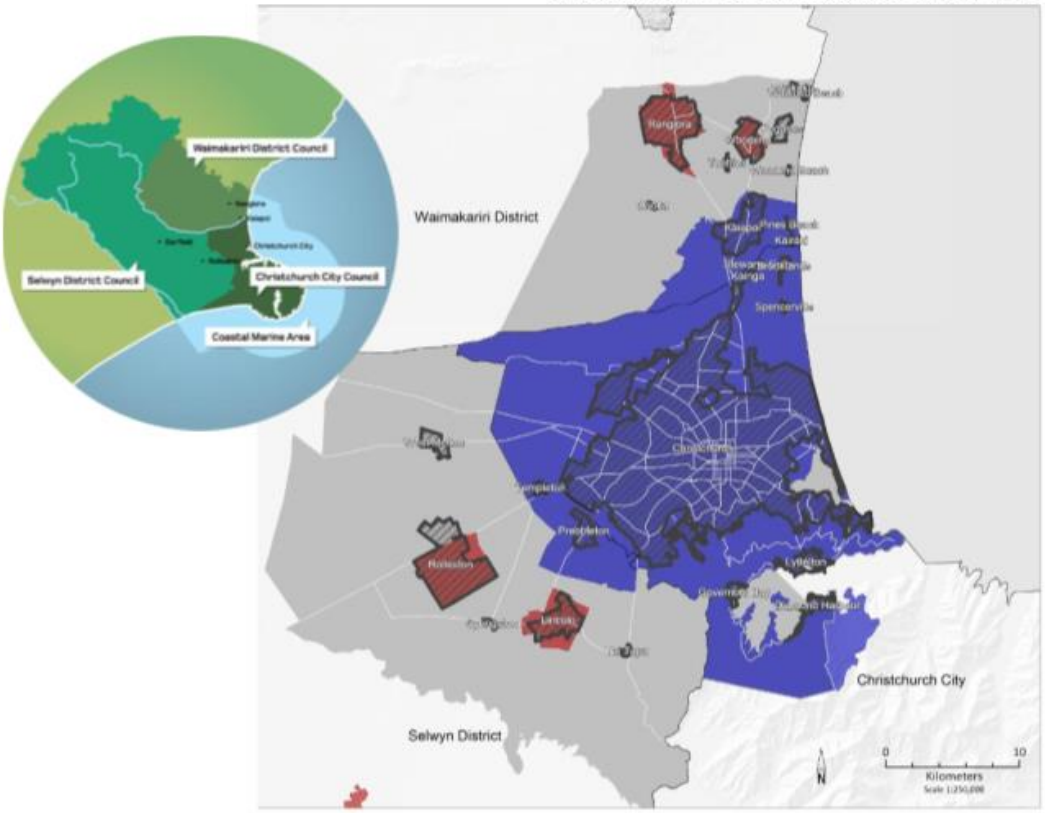
Christchurch has been identified as a 'Tier 1' urban environment in the NPS-UD. As a consequence, all of the related objectives and policies for 'Tier 1' Councils apply to Environment Canterbury, Christchurch City Council, Selwyn District Council and Waimakariri District Council.

Policy 10 of the NPS-UD requires that Tier 1 local authorities that share jurisdiction over urban environments work together when implementing the NPS-UD. Section 3.19 goes on to state "If more than one tier 1 …local authority has jurisdiction over a tier 1 urban environment, those local authorities are jointly responsible for preparing an HBA as required by this subpart.

The four Councils that form part of the Greater Christchurch Partnership (GCP) have been collaborating in this manner since 2004. This was reflected in the preparation of the first HBCA and subsequent Future Development Strategy, Our Space 2018 - 2048, with the Greater Christchurch area shown in grey and encompassing the areas in blue and red in the figure below.

The areas marked blue and red represent the SNZ Main and Minor Urban Areas respectively whilst the black hatched area represents the area within the Projected Infrastructure Boundary shown on Map A of the Canterbury Regional Policy Statement.

Figure 1: High Growth Urban Area and BCA Study Area



2.8 Description of Business Land in Greater Christchurch

Having regard to the NPS definition of business land, for the purposes of this assessment business land in Greater Christchurch includes land zoned as follows:

Christchurch City

Industrial Heavy Zone
The Industrial Heavy Zone (IH zone) recognises and provides for industrial activities that generate potentially significant adverse effects on the surrounding environment (such as high levels of noise, odour and heavy traffic movements), or involve significant use and storage of hazardous substances, necessitating separation from more sensitive land use activities. The established industrial heavy zones are located in the east at Bromley and Woolston, along Blenheim Road and the rail corridor between Addington and Hornby, and at Belfast. To the north of the city, areas at Chaneys and along Johns Road provide for mostly rural industries such as timber, aggregate processing, and construction materials storage. A large area of industrial IH Zone was created by rezoning (from rural) at South West Hornby through the Christchurch District Plan Review.

Industrial General Zone
The Industrial General Zone recognises and provides for industrial and other compatible activities that can operate in close proximity to more sensitive zones, due to the nature and limited adverse effects of those activities (such as noise, odour and traffic), and provides a buffer between residential areas and the Industrial Heavy Zone. The largest areas of Industrial General zoning are located within the established industrial areas of Wairakei, Hornby, Sydenham, Phillipstown and Woolston, whilst new areas were zoned Industrial General zone in South West Hornby, Islington and North West Belfast through the Christchurch District Plan Review.

Industrial Park Zone
The Industrial Park Zone recognises and provides for industrial activities in the high technology sector and other similar industries that seek to locate in a high amenity environment, dominated by open space and landscaping. These activities have the potential to generate higher volumes of traffic than other industry, but have negligible effects in terms of noise, odour or the use and storage of hazardous substances. They are mostly located in the vicinity of the Airport, at Wairakei Road and Memorial Avenue and also at Awatea in South West Christchurch.

Commercial Central City Business Zone
The Commercial Central City Business Zoned area is the principal employment and business centre for the city and wider region and the primary destination for a wide range and scale of activities, including comparison shopping, dining and night life, entertainment activities, recreation, community, civic and cultural activities as well as events and tourism activities. Visitor accommodation and residential activities are permitted above ground floor level.

Commercial Central City (South Frame) Mixed Use Zone
This relatively small zone in the Central City is intended to provide a clear delineation between the Commercial Central City Business Zone and the Commercial Mixed use Zone and enables a range of activities which support the Commercial Central City Business Zone. It is distinctive in that it encourages technology-based businesses and research and health related activities in a high amenity setting.

Commercial Central City Mixed Use Zone
The Commercial Central City Mixed Use Zone provides for the continuation of existing activities (including industrial) and a wide range of other community, commercial and business activities, while supporting the role of the Commercial Central City Business zone as the focus for retail activity, offices, and commercial services. Residential activities and visitor accommodation are permitted in this zone, including at ground floor level.

Commercial Core Zone
The Commercial Core Zone provides for the major commercial development in centres other than the CBD and is often the part of a suburban centre dominated by a mall or supermarket. The zone provides for a range of convenience and comparison shopping as well as community and employment activities. Visitor accommodation and residential activity is also permitted above ground floor level. The Commercial Core zone can be found in all District and Neighbourhood centres as defined in the Christchurch District Plan.

Commercial Banks Peninsula Zone

The Commercial Banks Peninsula Zone is confined to the established commercial centre of Lyttelton and Akaroa. The zone provides for a range of commercial and community activities and supports their role in meeting the needs of the surrounding community and visitors to the area. District Plan provisions for Lyttelton and Akaroa also recognise and protect the special character of the centre. Visitor accommodation and residential activity is permitted generally above ground floor, provided it is located outside of the Lyttelton Port Influences Overlay Area.

Commercial Local Zone
The Commercial Local Zone primarily comprises small groups of convenience shops and community facilities that serve the immediate area. There are 131 of these centres located around the city.

Commercial Retail Park Zone
The Commercial Retail Park Zone is made up of those areas that provide for larger format commercial activities as well as trade suppliers, e.g., large scale hardware stores, and yard-based retailing, e.g., car sales yards. It provides for a larger scale of development reflecting the types of activities in these locations, with rules limiting the range of activities. These zones are located at Tower Junction, Shirley (Homebase), Hornby, Papanui and along Moorhouse Avenue.

Commercial Mixed Use Zones (outside the central city)
The Commercial Mixed Use Zone recognises areas at Addington, New Brighton, Blenheim Road and around Mandeville Street where a significant proportion of commercial activity has historically established, but where the growth and development of additional commercial activities is limited (mostly to existing commercial activity) to ensure that commercial activity is focused within the network of commercial centres.

Commercial Office Zone
The Commercial Office Zone recognises and enables office activities in existing office park areas at Addington and Russley. These areas have large scale office activities which were lawfully established but have located in less-than-optimal locations (e.g., with poor public transport accessibility in some cases and outside of commercial centres). They are discouraged from expansion in support of a centres-based strategy for commercial development in the city.

Specific Purpose Airport Zone – Development Precinct only
The Development Precinct of the SP Airport Zone includes part of the terminals and land effectively outside the "airport security fence" and includes areas of business development to the north and south of the main airport area. Predominantly owned by Christchurch International Airport, the District Plan enables a range of business activities including light industrial development, visitor accommodation, entertainment and tourism-based ventures, retail, and offices (both subject to limitation on scale within the precinct). Much of the zone is also designated for airport purposes, which enables a range of airport related business activities including car rental.

These are the locations within Christchurch City that are zoned[13] and generally available for the general business market to operate and are shown in Appendix 1. It excludes business land zoned for a specific purpose and which is generally not available or has less availability for general business use e.g., Port, Hospital, Education and Council buildings/facilities.

The assessment of business land also includes two areas of unzoned land that are identified in the Canterbury Regional Policy Statement as Greenfield Priority Areas for (primarily Industrial) Business. These are located in the vicinity of Christchurch International Airport at 711 Johns Road and north of Avonhead Park Cemetery (Hawthornden GPA)[14].

Selwyn District Council[15]

Industrial Zone – Business 2
Business 2 Zones are areas where activities likely to be considered less pleasant by people are located, including light and heavy industrial developments. Aesthetic and amenity standards are less than what is anticipated in Living or Business 1 Zones, but activities are still managed to protect natural resources and

[13] In the Christchurch District Plan, operative December 2017
[14] These two GPA areas are zoned rural. Industrial zoning was considered but not confirmed in the recent Christchurch District Plan review on account of (predominantly) infrastructure constraints.
[15] The zones described below are that of the Operative District Plan. SDC is undertaking a Proposed District Plan process within which the zone names and descriptions will differ and align with the National Planning Standards.

people's health or well-being. Activities likely to cause 'reverse sensitivity' issues, such as residential activities, are discouraged in Business 2 Zones. The primary industrial node serving the district and wider region is located in Rolleston across State Highway 1 and the Main Trunk Line west of the town centre and residential environments. This node accommodates some light industrial activities along Jones Road but is dominated by the established I-Zone industrial park and the more recently zoned I-Port business park that is progressively being developed for industrial activities and includes a defined area for some Large Format Retail. The Port of Lyttelton and Port of Tauranga inland ports are both located within the Rolleston Business 2A zone. A secondary light industrial node is provided for in Lincoln, south of Lincoln University along Springs Road opposite the Te Whariki subdivision, although it is substantially smaller in size and has yet to be developed.

Commercial Zone – Business 1

Business 1 Zones are the primary commercial and retail centres serving the district's townships. These environments are recognised as being noisier and busier than Living zones, with more traffic, people, signs and building coverage. Business 1 Zones are still pleasant areas for people to live or work in, with good amenity/aesthetic values. They are also areas where higher density housing can be established as a permitted activity. The town centres in Rolleston and Lincoln are recognised Key Activity Centres (KACs) that are subject to precinct-based provisions to enable them to be a focus for community, commercial and service activities in the context of the Greater Christchurch Centre's Network. This KAC status comes with a number of prerequisites, including the need for these locations to be serviced by the strategic transport network and for the scale of development to be sufficient to service the specified catchment while ensuring it complements other centres within the network. This includes the Christchurch Central Business District that is the principal commercial, office and retail centre for Greater Christchurch. There are a range of business environments within Selwyn that are managed through the Business 1 Zone provisions, ranging from the larger centres in Rolleston and Lincoln, to the more localised town centres of Prebbleton and West Melton and neighbourhood centres servicing the residential subdivisions in the larger townships.

Neighbourhood and Local Centres

Neighbourhood[16] and Local Centres[17] are enabled in the District Plan to provide small convenience shopping for residents living within the larger subdivisions in Rolleston and Lincoln. These local commercial developments retain a Living Z zoning but are subject to the Business 1 Zone provisions of the District Plan where they are identified as a Neighbourhood or Local Centre on an outline development plan. The size and type of retail offerings within these centres are managed to ensure they complement the town centre environments.

Rolleston has three Neighbourhood or Local Centres at Brookside, Falcon's Landing, and Geddes/Dryden Trust that have capacity to support additional development. Two additional Neighbourhood Centres have been established within Rolleston's Faringdon and Lincoln's Rosemerryn subdivisions. These localised shopping areas have been fully developed.

These are the locations that are enabled for industrial and commercial purposes through District Plan zones and provisions that have some vacant land or redevelopment capacity. It excludes business land zoned for a specific purpose and which is generally not available or has less availability for general business use, including specifically the Lincoln University and the Crown Research Institutes that have a specific tertiary education and research purpose under the Business 3 Zone. A further Neighbourhood Centre was provided for in Lincoln to the south of the New World Supermarket, but this has been absorbed into the Town Centre KAC.

Waimakariri District Council[18]

Business 1 Zone

The Business 1 Zone includes key activity centres which are significant focal points for business, social, community, cultural and administration activities in those towns. Business activities are the predominant activity in the zone. For individual townships, the zone includes:

- Kaiapoi & Rangiora which are primary employment and civic destinations.
- Ravenswood which is a focus for local shopping and community activities.
- Pegasus with a grouping of community buildings, local shops, and other commercial activities (social and business focus).

Business 2 Zone

[16] Neighbourhood Centres provide for retail floor space up to a total of 2,000m^2 and individual retail tenancy areas less than 350m^2 GFA.
[17] Local Centres provide for retail floor space up to a total of 450m^2 and individual retail tenancy areas less than 350m^2 GFA.
[18] The zones described below are that of the Operative District Plan. WDC is undertaking a Proposed District Plan process within which the zone names and descriptions will differ and align with the National Planning Standards

The Business 2 Zone includes industrial and commercial areas which are characterised by large-scale buildings, low density of development and industrial type activities. The Business 2 Zone is intended to cater for activities with potential environmental effects unsuited to a town centre location, or which are conducted in conjunction with a primary activity.

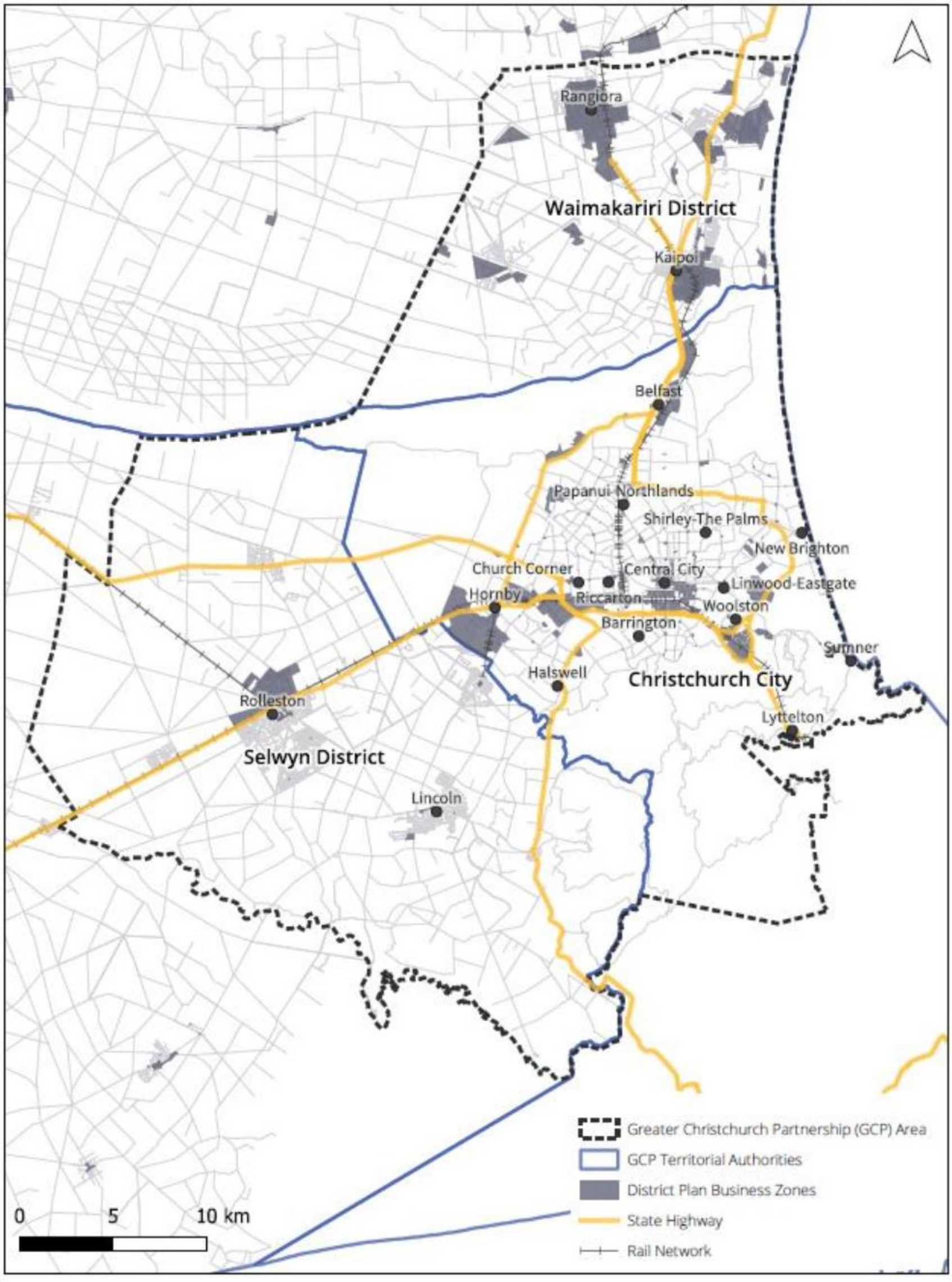
Business 3 Zone
The Business 3 Zone is a single, spot zone for the Carter Holt Harvey MDF panel plant at Sefton (approximately 167ha). The first building consent for the site was to 'erect a fibreboard factory' which was issued in 1974, therefore the activity has been established for over 40 years.

Business 4 Zone
The Business 4 Zone provides for local community business at four locations, being Kaikanui shops, Lilybrook shops, West Kaiapoi (Silverstream) and Mandeville North. They service a localised residential catchment, generally within walking or cycling distance of the zone.

Business 5 Zone
The Business 5 Zone is a spot zone which provides for trade supplier and large floorplate office activities in a distinct area at Kaiapoi. The site is approximately 8ha and is bound by State Highway 1, Smith Street and the Kaiapoi River (added to the District Plan in 2015 via Private Plan Change 20). The zoning recognises the unique locational characteristics of the area, opportunities for enhanced connectivity with road, pedestrian, cycle and reserve networks, and suitability for the development of space extensive activities not easily located within the Kaiapoi Town Centre.

Business 6 Zone
The Business 6 Zone is a spot zone which provides for a museum, wedding venue, tavern, and conference facility with associated non-permanent accommodation. The site is approximately 4.2ha and is located at the corner of Fernside Road and Flaxton Road, Southbrook, Rangiora. This site has not yet been developed and it is unclear if this will occur.

Figure 2: Greater Christchurch Partnership Plan Enabled Business Land



Greater Christchurch Partnership Plan Enabled Business Land

3. Population and Household Projections

3.1 Summary

To achieve the BCA requirements, having robust population and household projections is key to addressing the level of demand and subsequent supply required in both housing and business markets in the Greater Christchurch area.

Section 4 of the HCA outlines the methodology and rationale for the population and household projections. In short, the HCA identifies a range of projections based on the Stats NZ low, medium, and high population projections. It considers the factors that contribute to the projections (such as life expectancy, fertility, and migration) and compares that with recent take-up and Stats NZ population estimates. The population projections chosen for Waimakariri and Selwyn follows the Stats NZ high projection, and Christchurch follows the medium projection. The use of different projections for different TAs is appropriate as the projection chosen better reflects the growth trend. It also reflects the nature of the growth faced by the different TAs, Selwyn has a lot of internal migration that is harder to project whereas the size and age of Christchurch makes it easier to project.

The population projections are then converted to household projections. This uses the Stats NZ average household projection from the 2018 projection assumptions as they are the most recent. From households, a typology demand can be derived based on projected household compositions. The competitiveness margin is then included on top of this. This can then be shown as demand by sub-areas, which are based on Stats NZ SA2 areas.

Table 1: HCA Population Projections

Area	Short-Medium	Long	Total
Waimakariri	5,618	7,620	13,238
Christchurch	14,139	23,368	37,507
Selwyn	9,989	17,354	27,343
Total	29,746	48,343	78,088

4. Economic context and recent past

4.1 Introduction

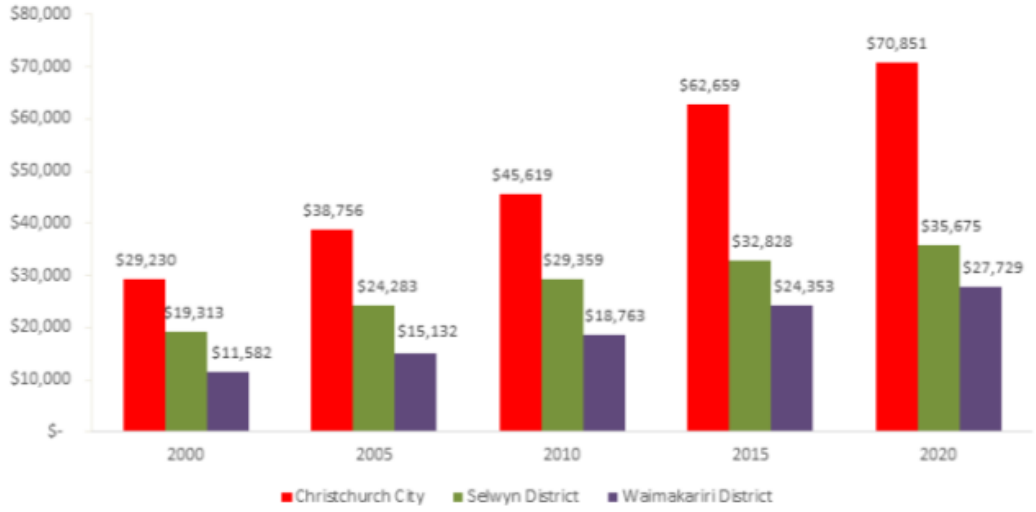
As context to this BCA and the Greater Christchurch Spatial Plan, analysis of the current composition and recent trends in business activity has been undertaken that considers the context and role of Greater Christchurch, employment, business, and economic activity.

Greater Christchurch plays a predominant role in the economy and population of New Zealand's South Island serving as the gateway to the South Island. The area of Greater Christchurch is the economic heart of the South Island, operating as a logistics and service hub for the region and the rest of the island with a strong diversified economic fabric with international air and seaports, good land transport and broadband communications infrastructure underpinned by reliable energy networks and well-established water supply, wastewater, and stormwater networks. It has a better level of social capital compared to other urban centres (especially in the North Island) and has proven to be a very resilient region and adaptable to drastic economic and social changes.

Greater Christchurch has a number of regional public assets, such as Te Pae (convention centre) and Tūranga, metro sports centre and the planned multi-use arena. There are a number of quality health and education facilities (including the largest hospital in the South Island, four tertiaries and several research institutions, including six of New Zealand's seven Crown Research Institutes). Greater Christchurch is also blessed with a significant asset base to support its future economic wellbeing. It sits within rich regional natural environment, has quality-built infrastructure and amenity, high quality health and education services and a diverse economy. The city has relatively greater capacity for growth (in terms of space) than other major urban centres in New Zealand (especially Auckland and Wellington).

The Greater Christchurch economy has undergone important structural changes over the past two decades, with changes in productivity and employment for most industries. This area's economy has been able to grow despite the 2010 and 2011 earthquakes, which influenced the economy and steered it in a direction that is now the 'new normal'. In terms of gross domestic product (GDP), the economy of Greater Christchurch comprises almost 10 percent of New Zealand's GDP and almost 45 percent of the total economy of the South Island[19].

Figure 3: GDP per capita – Christchurch City, Selwyn District, and Waimakariri District



Source: Ministry of Business, Innovation and Employment (MBIE)

In general, the agricultural hinterland of Greater Christchurch is a foundation of the regional economy and the region's dominant export base, with the top export commodities being dairy, meat and forestry products and tourism. Christchurch City's economy is strong when the regional economy is performing well and equally the

[19] According to the latest figures published by Infometrics (corresponding to the June 2021 quarter).

region benefits from a city that is performing well. For the last two decades the manufacturing industry has been the one that has comprised the largest share of the area's GDP. However, the share that this industry has had on Greater Christchurch's GDP has reduced over time. Despite this, the manufacturing industry remain a key sector for the local economy. The manufacturing, construction, and 'professional, scientific, and technical services' sectors contribute greatly to Greater Christchurch's economic output, and also exhibit above average productivity gains.

In Christchurch City (which is the main commercial hub in Greater Christchurch) the main business activity occurs in the Central City and in the Key Activity Centres. Christchurch Central is the principal business centre for the city and wider region, despite experiencing a decrease in its number of businesses and employees in the last decades, and as it is reasonable to assume that there will be a strong relationship between employment and business growth, and population growth. The areas in Christchurch that experienced high annual average growth rates in the number of businesses in the retail sector, in the accommodation and food services sector, and in the arts and recreation services sector during the period 2000-2020 (among the top twenty areas with the highest number of businesses in each of these sectors) were Woolston South, Tower Junction, and Sydenham Central, respectively.

The areas in Selwyn District that registered high annual average growth rates in the number of businesses in the retail sector, in the accommodation and food services sector, and in the arts and recreation services sector during the period 2000-2020 (among the top twenty areas with the highest number of businesses in each of these sectors) were Ladbrooks, Prebbleton, and Newtons Road, respectively.

The areas in Waimakariri District that experienced high annual average growth rates in the number of businesses in the retail sector, in the accommodation and food services sector, and in the arts and recreation services sector during the period 2000-2020 (among the top twenty areas with the highest number of businesses in each of these sectors) were Kaiapoi Central, and Mandeville-Ohoka.

Regarding retail spending in Greater Christchurch, during the period 2016-2020 on average 85.4 percent of the total amount of retail spending in the area occurred in Christchurch, whereas 5.7 percent happened in Selwyn District and 8.8 percent in Waimakariri District. During this same period the amount of retail spending in Greater Christchurch registered an annual average growth rate of 1.5 percent.

In terms of employment changes during 2006 and 2020, people moved mainly west. Employment grew by 43,342 (21.0 percent) from 2006 to 2020. Of the total employment growth, 29 percent occurred in Southwest Christchurch, 23 percent in Northwest Christchurch, 16 percent in the Inner-West and 14 percent in Selwyn. Almost all the growth in the Northwest and the Southwest has occurred since 2011. Two-thirds of the growth in the Inner West has occurred since 2011. Employment fell in the Central City (10,400 workers) and Inner-East (2,253 workers) from 2006 to 2020, mainly due to the loss and damage to land and building in the eastern part of the city because of the earthquakes.

Figure 4: Employment by Sub-Area

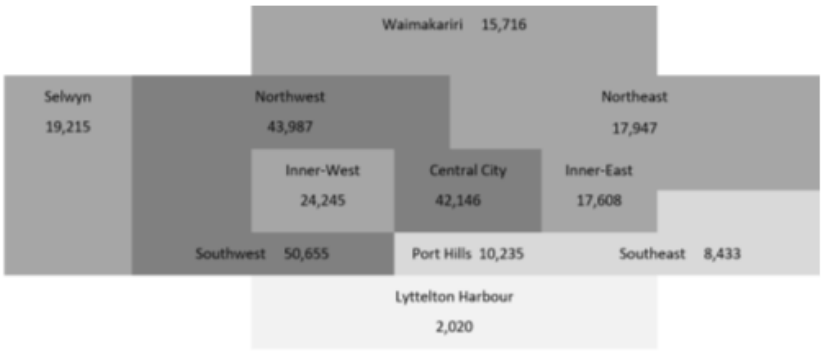


Table 2: Distribution of Employment across Industries in Greater Christchurch and Canterbury 2019

	Canterbury (excluding Greater Christchurch)	Christchurch	Waimakariri	Selwyn
% of Canterbury employment	17.6%	71.2%	5.0%	6.2%
Agricultural Production & Manufacturing	30.7%	3.6%	17.3%	26.3%
Tech Manufacturing	1.9%	3.8%	2.6%	4.0%
Other Manufacturing (excl agri & tech)	2.1%	3.9%	1.4%	2.0%
Construction	7.9%	9.9%	14.4%	9.6%
Transport & Warehousing	8.7%	10.8%	5.6%	7.4%
Retail, Hospitality, Arts & Rec Services	19.1%	19.0%	22.6%	15.2%
Knowledge Intensive Services	5.9%	14.0%	6.7%	9.3%
Public Services & Utilities	3.5%	5.1%	4.7%	8.5%
Education	6.2%	7.5%	9.8%	11.2%
Health	8.2%	13.0%	8.2%	3.1%
Other Services	5.8%	9.5%	6.8%	3.5%

Source: StatsNZ

5. Future Demand for Business Land

5.1 Introduction

The NPS-UD requires Tier 1 Councils to estimate the demand for each business sector for additional business land in the region and each District (Christchurch City, Selwyn and Waimakariri Districts) in the short, medium and long terms20.

This section sets out the results of the modelling undertaken to project employment growth to 2051 (30 years). Appendix 4 contains the methodology and description of the modelling approaches. When converting employment to workspace to floor area, different ratios are required. These ratios are based on what is currently happening in the Territorial Authority's market and considers the different nature of the employment. E.g., Christchurch has around 30m^2 per commercial employee, whereas Selwyn is nearer 40m^2.

The projections in this section are reported at the Greater Christchurch, and territorial level, which are translated from employment into floorspace and land requirements to subsequently compare projected land demand against the supply of business land enabled through the planning documents of each Council.

For Christchurch City, the modelling for demand is based on a VAR model, whereby employment growth drives population growth and employment growth is modelled based on past trends across a number of years (in this case, 20 years) as opposed to a single point in time. Employment data is the employment count sourced from Statistics New Zealand (Stats NZ), Business Demography database and spanning from 2000 to 2020.

For Selwyn District Council and the Waimakariri District Council, demand is forecast by establishing a set of final demands and then running these demands through an economic model that records the inter industry outcomes that are required to meet those demands. The employment count is modified to include sole traders to provide a more complete count of employment though this doesn't necessarily translate through to workspace demand. These interrelationships then vary through time. Demand is looked at for each main township that has a business centre (being Rolleston, Lincoln, Rangiora, and Kaiapoi, and then summarised for the rest of the district).

[20] NPSUD 3.28(1)

5.2 Retail and Office Land Demand for Christchurch City

Table 3 and Table 4 below shows the net additional demand for retail and office space in Christchurch City. The key outputs are the likely space requirements (in sqm) and land requirements in hectares with competitiveness margin added in accordance with the NPS-UD. The modelling to estimate the relative demand for retail and office space is influenced by a number of factors that need to be monitored on a regular basis, including projected employment growth.

The tables below show the net additional demand for land in the commercial zones of Christchurch City. In summary, the demand for retail activity is projected to increase by 20 hectares in the medium term and reach 47 hectares in the long term. With the competitiveness margin added, retail demand is projected to reach 24 hectares in the medium term and 54 hectares in the long-term.

Table 3: Projected retail demand for Christchurch City

Period	2024 (Short)	2031 (Medium)	2041	2051 (Long)
Likely Land Requirement (land, sqm)	66,885	129,922	151,269	118,793
Cumulative Likely Land Requirement (land, sqm)	66,885	196,808	348,077	466,870
Cumulative Likely Land Requirement (ha)	6.69	19.68	34.81	46.69
Cumulative Likely Land Requirement with competitiveness margin	8.03	23.62	40.03	53.69

The demand for office space is projected to increase by 51 hectares in the medium term and reach 137 hectares in the long term. With the competitiveness margin included, office demand is projected to reach 61 hectares in the medium term and 160 hectares in the long-term.

Table 4: Projected office demand for Christchurch City

Period	2020 Base	2024 (Short)	2031 (Medium)	2051 (Long)
Total Jobs	57,182	63,891	73,599	101,493
New Jobs		6,709	9,708	27,894
Likely Workspace requirement (sqm)		208,426	300,973	864,253
Likely Workspace Requirement (ha)		20.84	30	86.4
Likely Cumulative Workspace Requirement (sqm)		208,426	509,399	1,373,652
Cumulative Likely Land Requirement (ha)		20.84	50.9	137.36
Cumulative Likely Land Requirement with competitiveness margin		25	61	157.9

Table 5: Total Commercial Demand for Christchurch City

Period	Short	Medium	Long
Retail Land Requirement (ha)	8.03	23.62	53.69
Office Land Requirement (ha)	25	61	157.9
Total	33.0	84.6	211.6

5.3 Retail and Office Land Demand for Selwyn and Waimakariri

Selwyn District

Formative Ltd has used the same method to assess demand in the Selwyn and Waimakariri Districts using Growth Models with the same functionality. The Growth Models have been developed using the most detailed spatial data available to establish the current and future potential location of demand by location within each district. This modelling is constrained by the supply of land (and floorspace) within each location (planning zones) i.e., the Growth Models impose supply constraints to the district level projections.

Appendix 4 outlines the methodology adopted for projecting the growth in floorspace using an economic futures projection of employment by sector, the current employment in the Business 1 Zone and the current developed floorspace. Of note is that a conservative approach was adopted when setting key assumptions.[21] This conservative approach was selected because of the inherent uncertainty associated with projecting demand over the timeframes of the NPS-UD. This is likely to be more apparent in the long term.

Table 6 below shows the net additional demand for Business 1 zone land in the Selwyn District. The key output is the likely land requirement in hectares under the NPS-UD requirements. The table also shows the split of demand between retail and non-retail commercial activity in terms of floorspace. The modelling to estimate the relative demand for commercial land is influenced by a number of factors that need to be monitored on a regular basis, including projected population increases.

In summary, the demand for retail, commercial services and non-retail community activity is projected to increase by 20 hectares in the medium term and 44 hectares in the long term. For the Business 1 zone the NPS buffer suggests that 24 hectares should be provided for in the medium-term and 50 hectares for the long-term.

Table 6: Projected commercial demand for Selwyn District

	Short	Medium	Long
New Retail Jobs	161	499	1,469
New Commercial Services Jobs	593	1,741	4,310
New Non-Retail Community Jobs	817	2,756	9,327
Total New Commercial Jobs	1,571	4,996	15,106
Likely Workspace Requirement (sqm)	18,749	59,625	176,982
Likely Land Requirement (ha)	5	15	43
Likely Land Requirement (ha) with competitiveness margin	6	18	50

The conversion of employment to workspace has been conducted using Workspace Ratios. The workspace ratios are estimated using current employment as compared to floorspace within the business zones. In the commercial zone the vast bulk of buildings in the District are single level, therefore all sectors compete for the same ground floor space. Broadly, the Workspace ratio generally ranges from $30m^2$ to $60m^2$, with an average of $38m^2$. While purpose built (newer) spaces may achieve a higher density, it is conservative to apply the existing achieved rate which may overstate the demand for floorspace.

The conversion of workspace to land area is conducted using Floor Area Ratios. The Floor Area Ratios are estimated using current floorspace compared to land parcel area within the business zones. Broadly, the Floor Area Ratio ranges from 0.30 to 0.60, with a mid-point of 0.41. While newer buildings tend to achieve a higher density, it is conservative to apply the existing achieved rate which may overstate the demand for land.

[21] For example, the assumption of work space ratios was held constant in the modelling. In the absence of historic data for Selwyn and Waimakariri, it was not possible to build evidence on the potential trends. However, there is data for some of the larger urban economies in Australasia that indicates that commercial work space ratios are decreasing – i.e., demand for space is decreasing per worker. Therefore, the assumption of constant work space ratio is considered to be conservative – which may result in the projected demand being higher than is required.

Waimakariri District

Demand for the Waimakariri District is estimated using the same method described for Selwyn District and therefore this method is not repeated. However, Waimakariri District has an additional commercial zone, the Business 1 (town) and the Business 4 (small neighbourhood). In the following tables these two zones area combined.

Table 7 below shows the net additional demand for land in the Business 1 and Business 4 zones in the Waimakariri District. In summary, the demand is projected to increase by 9 hectares in the medium term and reach 16 hectares in the long term. For the Business 1 and Business 4 zone the NPS buffer suggests that 11 hectares should be provided for the medium term and 18 hectares for the long term.

Table 7: Projected commercial demand for Waimakariri District

	Short	Medium	Long
New Retail Jobs	251	760	2,007
New Commercial Services Jobs	506	1,480	3,706
New Non-Retail Community Jobs	611	2,029	6,208
Total New Commercial Jobs	1,368	4,269	11,921
Likely Workspace Requirement (sqm)	22,277	69,518	189,416
Likely Land Requirement (ha)	3	10	27
Likely Land Requirement (ha) with competitiveness margin	4	12	32

The conversion of employment to workspace has been conducted using Workspace Ratios. The workspace ratios are estimated using current employment as compared to floorspace within the business zones. In the commercial zone the vast bulk of buildings in the District are single level, therefore all sectors compete for the same ground floor space. Broadly, the Workspace ratio generally ranges from $30m^2$ to $60m^2$, with an average of $38m^2$. While purpose built (newer) spaces may achieve a higher density, it is conservative to apply the existing achieved rate which may overstate the demand for floorspace.

The conversion of workspace to land area is conducted using Floor Area Ratios. The Floor Area Ratios are estimated using current floorspace compared to land parcel area within the business zones. Broadly, the Floor Area Ratio ranges from 0.50 to 0.80, with a mid-point of 0.70. While newer buildings tend to achieve a higher density, it is conservative to apply the existing achieved rate which may overstate the demand for land.

5.4 Retail and Office Land Demand at a Greater Christchurch level

Table 8 below summarises the total demand for commercial activities at a Greater Christchurch level.

Table 8: Total demand for retail and office activities for Greater Christchurch

	Short Term	Medium Term	Long Term
Christchurch	33.0ha	84.6ha	211.6ha
Selwyn	6ha	18ha	50ha
Waimakariri	4ha	12ha	32ha
Greater Christchurch	**43ha**	**114.6ha**	**293.6ha**

5.5 Industrial Land Demand

Christchurch City

The industrial land requirement is estimated to be 13 hectares in the short term, extending to 15 hectares by 2031 and 26 hectares by 2051 with the competitiveness margin added in accordance with the NPSUD.

Table 9: Projected industrial demand for Christchurch City

Period	2021	2024	2031	2051
Employment	21,446	24,990	24,543	23,363
Associated demand for space	96,883	105,694	126,126	229,837
Annual new floor space demand		8,811	20,432	103,711
Cumulative space requirement		105,694.4	126,126.1	229,837.5
Cumulative total land requirement (ha)		10.57	12.61	22.98
Cumulative total land requirement with competitiveness margin		12.68	15.14	26.43

Reflecting global trends, the demand for warehousing and logistics is anticipated to be greater. The land requirement for warehousing and logistics is estimated to be 6 hectares in the short term, extending to 21 hectares by 2031 and 93 hectares by 2051 with the competitiveness margin added in accordance with the NPSUD.

Table 10: Projected demand for warehousing and logistics in Christchurch City

Period	2020	2024	2031	2051
Employment	24,814	26,170	28,445	34,909
Additional Floor Space Demand		47,351	123,773	635,459
Cumulative space requirement		47,351	171,124	806,584
Cumulative Land requirement (ha)		4.74	17.11	80.66
Cumulative total land requirement with competitiveness margin		5.68	20.53	92.76

Table 11: Total Industrial Demand for Christchurch City

Period	Short	Medium	Long
Industrial Land Requirement (ha)	12.68	15.14	26.43
Warehousing and Logistics Land Requirement (ha)	5.68	20.53	92.76
Total	18.4	35.7	119.2

Greater levels of demand are anticipated in the south, south west and west of the City which can be attributed to its good access to the State Highway network linking north and south and to the airport, seaport and inland ports.

Also, land in western Christchurch is generally less constrained geotechnically than eastern and northern parts and there has been a relatively large available supply to accommodate market demands.

Selwyn District

Again, the Selwyn Capacity for Growth Model has been used to project demand for industrial land. The Business 2 zone is the only industrial zone. It is important to note that 'industrial' demand presented for Selwyn and Waimakariri reflects the demand by the multiple activities that have traditionally located in the industrial zones.

This means that some of the demand will be related to sectors that are not traditionally thought of as 'industrial' (like retail and office). Also, there is some industrial demand that will be located in other non-industrial zones (like rural manufacturing), which are excluded from the assessment of demand for Business 2 zone.

Table 12 shows the results from the Selwyn Capacity for Growth model which indicates that the demand for industrial land reaches approximately 224 hectares in the long-term. The NPS buffer would suggest a requirement of 257.6 hectares.

In the short term, the NPS-UD requirement is around 9.3 hectares per annum. In the medium term the NPS requirement is around 8ha per annum. In the long run, the NPS-UD requirements indicate that 8.6 hectares per annum will be required. Initial discussions with stakeholders have indicated that demand for vacant industrial land in Rolleston in particular may be higher, especially regarding industrial land demand driven by freight. Recent work by Selwyn Council shows additional land demand driven by freight is around 5 hectares per annum.

Table 12: Projected demand for industrial land in Selwyn District

	Short	Medium	Long
Employment	512	1,591	3,735
Associated demand for space (m^2)	142,568	443,020	1,188,933
Annual new floor space demand (m^2)	47,523	44,302	39,631
Cumulative land requirement (ha)	35	109	297
Likely total land requirement with competitiveness Margin	42	131	347

Broadly, in the industrial areas of the District the Workspace ratio generally ranges from 200m^2 to 300m^2, with a mid-point of 250m^2. The District has seen recent growth in storage and warehousing, which has resulted in the workspace ratio being larger than in the past. This trend may continue and should be monitored to ensure that sufficient supply is provided to meet demand.

The conversion of workspace to land area is conducted using Floor Area Ratios. The Floor Area Ratios are estimated using current floorspace compared to land parcel area within the business zones. Broadly, the Floor Area Ratio ranges from 0.30 to 0.50, with a mid-point of 0.40. While newer buildings tend to achieve a higher density, it is conservative to apply the existing achieved rate which may overstate the demand for land.

Waimakariri District

For Waimakariri District the results from the Waimakariri Capacity for Growth model indicates that the demand for industrial floorspace/land is around twice the level forecast in Selwyn. The demand is forecast to reach 40.5 hectares (including roads and services). The NPS buffer would suggest a requirement of 46.6 hectares in the long term as reported in Table 13 below.

In the short term the NPSUD requirement is around 4 hectares per annum. This high level of demand reflects the model assuming that demand in the medium term will come forward due to the availability of zoned and serviced land for development. In the medium term the NPS requirement decreases significantly. Over the thirty-year period the NPSUD requirements indicate that 1.6 hectares per annum will be required.

Table 13: Projected demand for industrial land in Waimakariri District

	Short	Medium	Long
Employment	349	878	2,339
Associated demand for space	50,979	128,250	333,450
Annual new floor space demand	16,993	12,825	11,115
Cumulative space requirement	10	26	98
Cumulative total land requirement (ha)	12	31	79

Broadly, in the industrial areas of the District the Workspace ratio generally ranges from 100m^2 to 200m^2, with a mid-point of 150m^2. The District has seen recent growth in storage and warehousing, which has resulted in the workspace ratio being larger than in the past. This trend may continue and should be monitored to ensure that sufficient supply is provided to meet demand.

The conversion of workspace to land area is conducted using Floor Area Ratios. The Floor Area Ratios are estimated using current floorspace compared to land parcel area within the business zones. Broadly, the Floor Area Ratio ranges from 0.30 to 0.60, with a mid-point of 0.49. While newer buildings tend to achieve a higher density, it is conservative to apply the existing achieved rate which may overstate the demand for land.

Greater Christchurch

The table below summarises the total industrial demand at a Greater Christchurch level.

Table 14: Total industrial demand at a Greater Christchurch level

	Short term	Medium term	Long term
Christchurch	18.4ha	35.7ha	119.2ha
Selwyn	42ha	131ha	347ha
Waimakariri	12ha	31ha	79ha
Greater Christchurch	**72.4ha**	**197.7ha**	**545.2ha**

Reflecting the nature of the models, the growth in demand is projected in the locations of existing activity. However, it is possible that past trends continue and there are higher demands in the south west (e.g., Hornby, Rolleston) with a preference for the flexibility of greenfield over brownfield land and the benefits of these locations in terms of accessibility.

6. Existing Land Supply

6.1 Introduction

The NPS-UD requires Councils to estimate the development capacity to meet expected demand for business land for each business sector, plus the appropriate competitiveness margin. This includes the capacity that is plan-enabled, plan-enabled and infrastructure-ready and plan-enabled, infrastructure-ready and suitable. Plan-enabled is defined in the NPS-UD as follows:

(a) in relation to the short term, it is on land that is zoned for housing or for business use (as applicable) in an operative district plan.
(b) in relation to the medium term, either paragraph (a) applies, or it is on land that is zoned for housing or for business use (as applicable in a proposed district plan)
(c) in relation to the long term, either paragraph (b) applies, or it is on land identified by the local authority for future urban use or urban intensification in an FDS.

Essentially, the assessment requires a stocktake of vacant zoned land (and land with redevelopment potential if applicable) and calculation of how much development capacity that land can accommodate, having regard to district plan provisions. Capacity, which is not currently zoned but identified in a longer-term planning document, may also be assessed.

For the purposes of this assessment, retail and office land supply is aggregated as 'commercial land supply' in recognition that commercial zones generally provide for either or both retail and office activities i.e., they compete for use of the same land.

It should be noted that for this assessment of vacant land supply SDC and WDC make a distinction between sites that are wholly vacant and those which are partly vacant. The latter is coined 'vacant potential' in the Selwyn and Waimakariri Capacity for Growth models and represents sites that have an existing building but are under-utilised and have capacity to accommodate additional building floorspace. CCC also records land in its vacant land database as wholly vacant or partly vacant but considers it more appropriate to combine the two for the purposes of this assessment to provide a total vacant land supply. CCC considers that together this total vacant land capacity still represents a conservative estimate of the City's commercial land capacity as the redevelopment potential of land has not yet been factored into the assessment.

6.2 Commercial Land Supply

Christchurch City

Commercial activity in Christchurch is primarily distributed within a network of centres (comprising Central City, District, Neighbourhood, Local and Large Format Centres, as shown in Appendix 1). The District Centres and two of the neighbourhood centres are also identified as Key Activity Centres in the Canterbury Regional Policy Statement, recognising the significant public and private investment made in, or intended for these areas and identifying them as the preferred locations for future development as businesses shift around the city over the long term.

There are also areas where commercial activity has traditionally located but where growth is no longer supported by District Plan policy (e.g., Commercial Office and Suburban Commercial Mixed Use areas). The commercial centres act as the focal points for community and business activity and each centre has a role that reflects their functions and catchment sizes. The Christchurch District Plan framework for commercial activity is to give primacy and support the recovery of the central city whilst supporting and enhancing the role of district centres and maintaining the role of the smaller neighbourhood, local and large format centres.

Each centre is comprised of zones (outlined in Section 2.8) which give effect to this centres-based framework. Commercial zones generally provide for retail and office activities although the permitted scale and range of activity is influenced by the role of the centre in the hierarchy. For instance, office tenancy size is limited in district and neighbourhood centres to encourage larger office tenants back into the central city and retail tenancy size is limited in neighbourhood and local centres to reflect their role in catering for the predominantly convenience needs of local residents. Residential activity and visitor accommodation is permitted within most

centres although is generally required to be located at upper levels of a development[22], therefore, maintaining ground level space for commercial activity. District Plan provisions therefore play an important role in determining the capacity of commercial land to accommodate multiple (sometimes competing) activities.

Commercial land supply (occupied and vacant land) in Christchurch City has been determined using the Council's Vacant Land Register and carrying out a land use survey of all commercial centres (excluding local centres).

Table 15 identifies an existing supply of 88 hectares of vacant commercially zoned land in Christchurch City along with a further 15 hectares of vacant land with a mixed (primarily commercial) zoning in the Central City.

As outlined below, there remains a significant amount (27 hectares) of vacant land in the Central City Business and Mixed Use Zones largely as a result of the significant earthquake related demolitions, along with extensive vacant commercial floorspace.In total, this brings plan-enabled supply identified in Christchurch to 103 hectares. For this BCA redevelopment potential to provide additional commercial capacity has not been more widely assessed. It is important to note that commercial activity also occurs outside of these centres, within industrial, specific purpose zones (e.g., hospital or airport) and residential zones in particular.

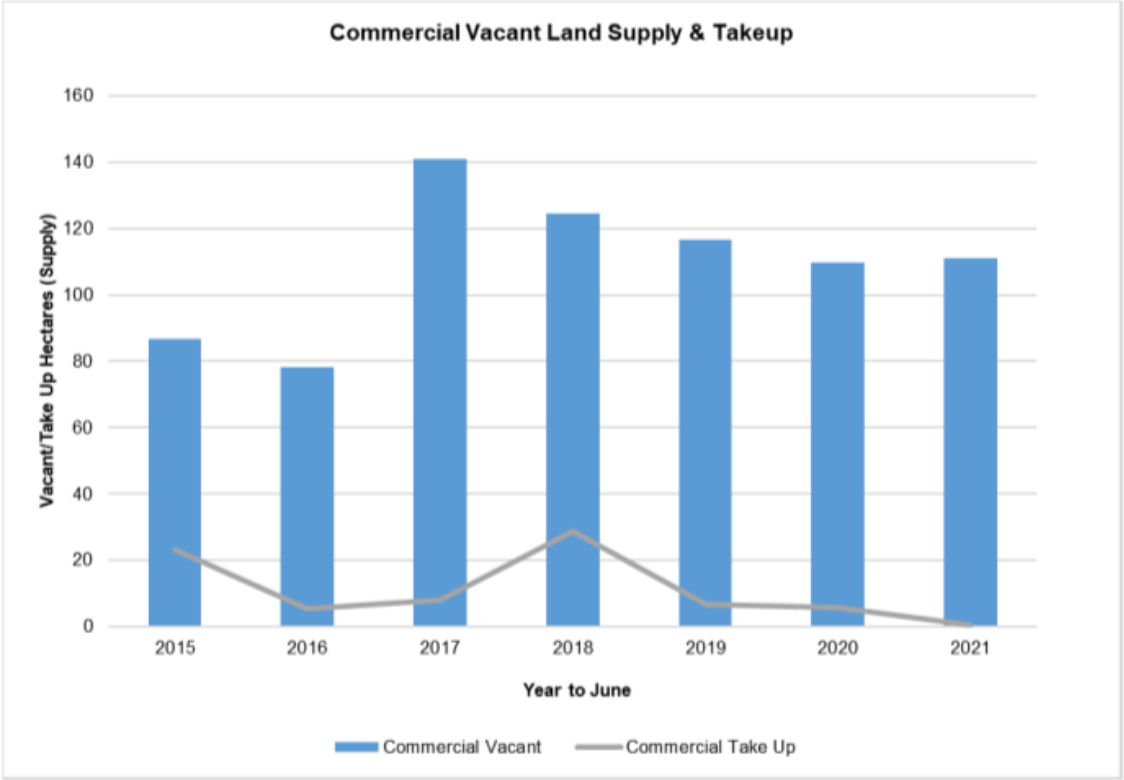
Table 15: Vacant Commercially Zoned Land in Christchurch City

Commercial / Mixed Use	Vacant (potential) ha	Vacant (whole) ha	Total (ha)
Commercial			
Commercial Banks Peninsula	0	1	2
Commercial Central City Business	3	9	11
Commercial Core	15	41	56
Commercial Local	2	7	8
Commercial Office	3	1	4
Commercial Retail Park	1	5	7
Total Commercial	24	64	88
Mixed Use			
Commercial Central City (South Frame) Mixed-Use	1	2	3
Commercial Central City Mixed-Use	3	9	12
Mixed-Use Total	4	11	15
Total Commercial and Mixed-Use	28	75	103

The graph below shows that the supply of vacant commercial land in Christchurch increased in 2017 as a result of the District Plan becoming operative in December 2017. This included the rezoning of 17 hectares of vacant land at North Halswell as a new Key Activity Centre, zoned to accommodate the needs of a rapidly growing south-west population. This is followed by a slight decrease in 2018 and 2019, before steadying out in 2020 and 2021. The graph also illustrates the spike in commercial land take-up in 2018 associated with the City's rebuild. This, along with the commercial consents data[23], shows that this peak has now passed with commercial building activity and land development having dropped to a low level (0.7 hectares in 2021).

Figure 5: Commercial Vacant Land and Take-Up 2015-2021

[22] Other than in the Central City Commercial Mixed Use Zone where is it permitted at ground floor level
[23] See GCP Urban Development Indications Quarterly Monitoring Report (June 2017) Indicator 7 and Table 5 of the PEL Report on Christchurch Business Land Capacity (page 29)



Source: Adapted from the GCP Quarterly Monitoring of Urban Indicators Report

Table 16 shows the size distribution of vacant commercial land in Christchurch City for each quadrant or zone.

Table 16: Size distribution of vacant commercial land parcels in Christchurch City (by %)

Quadrant / Zone	<1,000m²	1,000m² – 5,000m²	5,000m² – 1 ha	1ha – 2ha	2ha – 5ha	>5ha
Quadrant						
Central and West	37.7%	35.9%	17.1%	9.2%	0%	0.0%
East, South and South West	19.9%	17.1%	7.8%	22.3%	6.2%	26.8%
North and North East	14.7%	12.4%	15.7%	35.1%	22.1%	0.0%
Zone						
Commercial Central City Business	39.7%	50.5%	0.0%	9.7%	0.0%	0.0%
Commercial Central City (South Frame) Mixed Use	64.9%	9.9%	25.2%	0.0%	0.0%	0.0%
Commercial Central City Mixed use	47.4%	32.1%	8.8%	11%	0.0%	0.0%
Commercial Core	15.2%	13.4%	11.8%	30.2%	13.8%	15.7%
Commercial Office	2%	32%	15.1%	0.0%	50.9%	0.0%
Commercial Retail Park	16.3%	11.6%	27.8%	44.3%	0.0%	0.0%
Commercial Local	36.6%	24.2%	26.5%	12.7%	0.0%	0.0%

Total vacant commercial parcels (%)	24.9%	21.1%	13%	22.9%	9.5%	8.6%

Source: CCC Vacant Land Register

As would be expected, the majority of commercially zoned land parcels are small, and many of these small sites are located in and around the CBD (noting that there is no minimum lot size in the Commercial Central City Business Zone). There is a more variable spread of site sizes in the Commercial Core zone as this zoning covers all the district centres (generally greater than 30,000m² retail GFA in size) and neighbourhood centres (generally between 3,000m² and 30,000m² retail GFA). Within the Commercial Core zone, there are varying parcel sizes, with the pattern of activities not necessarily reflecting the parcel size, due to prevalence of leasehold tenure. Shopping malls, for example, may be owned by one company but accommodate a large number of individual shops and some offices. Neighbourhood and local shopping areas are more likely to be in multiple land ownership.

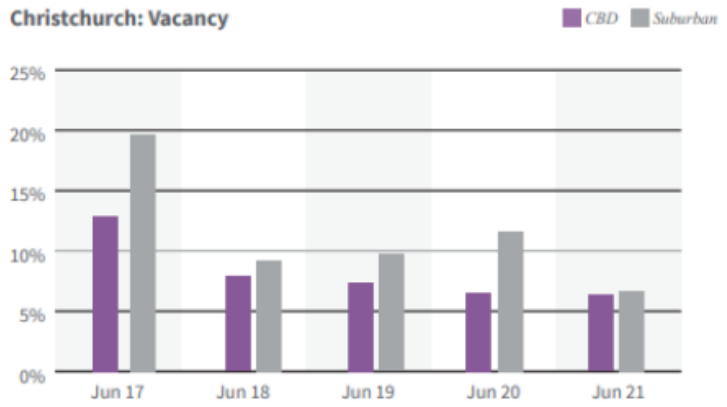
The commercial land size distribution shown in Table 16 above is "distorted" by the presence of two large zoned commercial zones at Belfast/Northwood (south of Radcliffe Road) and North Halswell, the former being developed for a retirement village. Both these zoned areas comprise several large titles, with the former all in single ownership while the latter is not. Because of tenure and site configuration variables, size of lots is less important for commercial than for industrial land. However, it appears that there is presently a range of vacant commercial lot sizes across the City which provides sufficient choice for businesses.

Commercial floorspace Vacancy

A healthy functioning, efficient, commercial market sector requires an element of floorspace vacancy in order to maintain choice, competitiveness and pricing and PEL has previously advised that an 8% vacancy rate provides the market with sufficient flexibility to meet its short-term needs (i.e., the movement of existing and new business)[24].

A review of vacant office space in October 2021 by JLL found there was 5.3% vacant space in the prime office market and with a limited supply in the pipeline, the level of vacant prime office floorspace was expected to remain low in the near term.[25] Similarly, the suburban market has shown lower levels of vacant floorspace as illustrated in the following graph.

Figure 6: Vacant floorspace

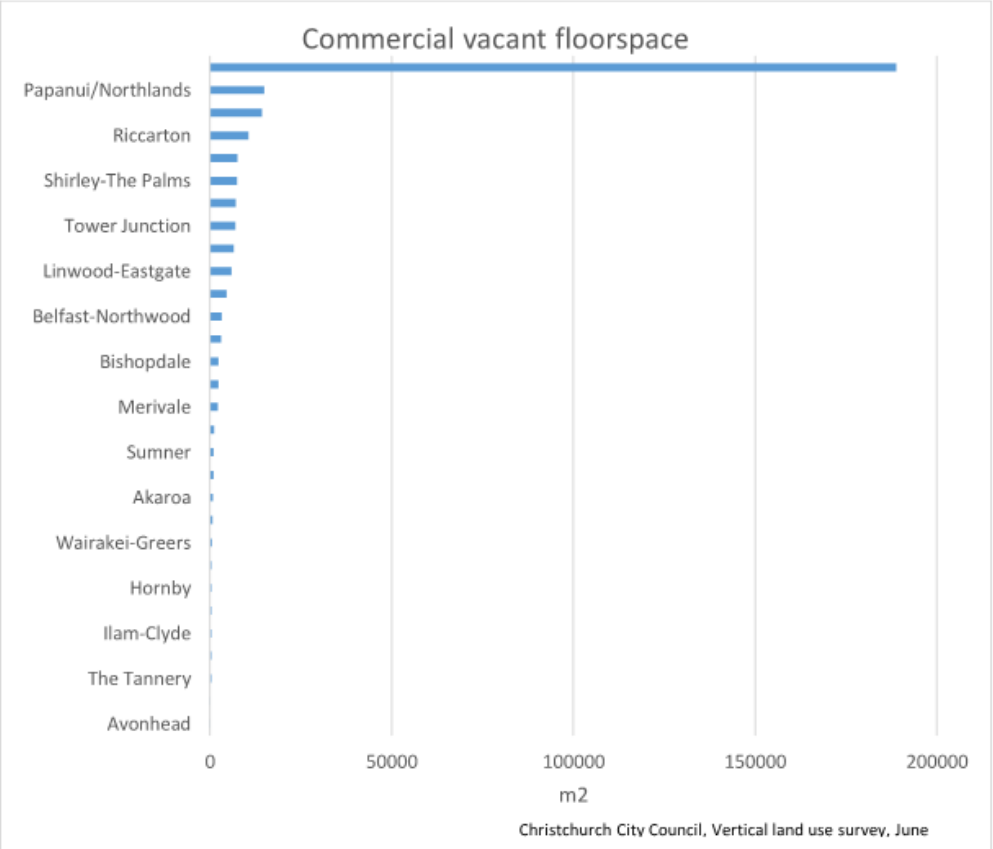


Source: JLL

As a comparison, Council's annual vertical land use survey estimates the amount of vacant space in completed buildings across each floor in commercial and industrial zones across the city.

Figure 7: Floorspace by area

[24] Property Economics Limited (2017) Christchurch Business Capacity Assessment page 61
[25] https://www.jll.nz/content/dam/jll-com/documents/pdf/research/apac/new-zealand/jll-nz-vertical-vacancy-review-q4-2021-final.pdf



The data indicates that the Central City (not shown in the figure above), Papanui/Northlands, Riccarton and Moorhouse Avenue have the most vacant floor space while Avonhead, Colombo/Beaumont and The Tannery have the least amount of vacant floor space.

The Central City has 188,940m2 of vacant floor space (comprised of 76,650m^2 vacant ground floor space and 46,446m^2 vacant first floor space). 224 Cashel Street (former IRD building – which has eight storeys of vacant space) and 161 Cashel Street (Grand Central Building) are two Central City buildings with the greatest amount of vacant floor space. This 188,940m2 of vacant floor space has not been included in the sufficiency assessment of this capacity assessment, however the vacant floor space will help alleviate the shortfall of commercial development capacity in the long term.

Papanui/Northlands has the second highest amount of vacant floor space (14,969m^2), spanning over ground and first floor tenancies. There are 7 vacant tenancies within Northlands Mall (at the time of the survey) albeit with a relatively small combined vacant space of 358m^2. There are also a few vacant tenancies along Papanui Road and Langdons Road. Like many other tenants, Briscoes has moved to the Northlink retail park development (still within the commercial centre).

Moorhouse Avenue has the third highest amount of vacant floor space (14,383m^2) which mostly consists of some large vacant buildings on Pilgrim Place and a vacant tenancy in the new Spotlight building.

Selwyn District

In order to estimate the amount of supply in the commercial (Business 1 Zones) the SCGM undertakes a desktop assessment of the rates database and building footprints and was last done in 2019[26]. In addition, as a ground-truthing exercise the Council has started monitoring commercial land within Rolleston, Lincoln, West Melton,

[26] Refer to the Market Economics Selwyn Capacity for Growth Model technical Report.

and Prebbleton to understand the rate of change. The results from any future surveys of floorspace will be incorporated in the next SCGM and BCA.

In the following section we present the results from the desktop analysis. While, the incorporation of the JLL results is likely to reduce the level of supply available within the district, the magnitude of the change is unlikely to change the findings of this study. Overall, we consider that the results presented in this report provide a reasonable proxy of the supply currently available.

The following table presents the supply in terms of hectares of land and two key metrics:

- Vacant land - properties that have no floorspace or building footprint in 2016.
- Vacant Potential - properties that have low levels of floorspace and for which additional floorspace is enabled within the property (potential for redevelopment).

The commercial supply in the plan enabled Business 1 zone is estimated to comprise 4.1 hectares of vacant land and 2.7 hectares of vacant potential, being between 4.1 to 6.8 hectares of available supply.

The supply results exclude vacant floorspace within existing buildings. The initial results from Selwyn's monitoring suggests that vacancy is very low. The scale of the floorspace vacancy in the B1 zone is well below a natural level that is required to maintain a healthy functioning, efficient, commercial market. Therefore, it is sensible to exclude this supply from the following assessment. Secondly, the redevelopment potential from fully developed properties[27] was not modelled. Given the age of buildings and relativity between full development levels and plan enabled development, it is less likely that this capacity will be utilised even in the long term.

Table 17: Vacant commercial land in Selwyn[28]

Commercial	Vacant	Vacant Potential	Total
Rolleston	18ha	8ha	26ha
Lincoln	1ha	1ha	2ha
Other	0ha	2ha	2ha
Total Zoned	19ha	11ha	30ha

Source: SCGM

Waimakariri District

The same approach used for determining land supply in Selwyn was also used in Waimakariri. The concepts of vacant and vacant potential applied for Waimakariri are the same as Selwyn. Again, the supply results exclude vacant floorspace within existing buildings. The initial results from the JLL survey suggest that vacancy is very low at well below 5%. The scale of the floorspace vacancy in the B1 zone is well below a natural level that is required to maintain a healthy functioning, efficient, commercial market. Therefore, it is sensible to exclude this supply from the following assessment. Secondly, the redevelopment potential from fully developed properties[29] was not modelled. Given the age of buildings and relativity between full development level and plan enabled development, it is less likely that this capacity will be utilised even in the long term.

The commercial supply in the plan enabled Business 1 and 4 zone is estimated to comprise 13 hectares of vacant land and 18 hectares of vacant potential, being between 13 to 31 hectares of available supply.

Table 18: Vacant commercial land in Waimakariri[30]

Commercial	Vacant	Vacant Potential	Total
Business 1 and 4 Zones	36ha	27ha	63ha

Source: WCGM

[27] Fully developed is a property that has buildings and floorspace that exceeds the level achieved in the local market.
[28] Note that these figures are currently under review and may be subject to change.
[29] Fully developed is a property that has buildings and floorspace that exceeds the level achieved in the local market.
[30] Note that these figures are currently under review and may be subject to change.

Greater Christchurch

Table 19 below summarises the quantum of vacant land at a TA and Greater Christchurch level.

Table 19: Summary of vacant commercial land at a TA and Greater Christchurch level

	Vacant (Whole)	Vacant (All)[31]
Christchurch	75.0ha	103.0ha
Selwyn	19ha	30ha
Waimakariri	36ha	63ha
Greater Christchurch	**84.8ha**	**133.5ha**

The above table presents vacant land as a range. The lower figure in the range comprises the total area of wholly vacant land within the districts. The upper figure represents the vacant land supply when under-utilized or partially vacant land capable of more intensive redevelopment is included.

[31] Vacant (all) includes wholly vacant and partly vacant sites in the context of Christchurch City, and wholly vacant and vacant potential in WDC and SDC

6.3 Industrial Land Supply

Christchurch City

Distribution of industrial land

The current distribution of industrial land is largely a result of historical settlement patterns and the rezoning of land through the district plan review on the periphery of the city. The earliest industry in Christchurch was in the Woolston area, near the Heathcote River, and focused on processing primary produce (e.g., tanneries, wool scouring, soap manufacture and flour milling.) Freezing works were established at Belfast and Islington and later a fertiliser works was built at Hornby. The rubber and plastics industry subsequently became important in the City, and further industry was established in the Sockburn area near the railway line and around the CBD. Christchurch also became a centre for clothing production for the domestic market, and later a centre for electronics.

While several of the longest established factories had closed by the latter part of the 20th century, the locational pattern of industry in the city has not changed dramatically over time. The older established industrial areas are still predominantly used for industrial purposes, albeit that some retail uses moved into industrial areas during a period when a more permissive planning regime of the previous City Plan was in place.

There has however been a trend in recent years for industry to prefer locations in the west of the city closer to SH1 and the airport. The degree of westwards movement of industry appears to have increased since the Canterbury Earthquakes, with temporary activity displaced out of the CBD to the suburbs becoming permanent in some instances, and geotechnical costs not favouring redevelopment in the east. In the short term, it appears that the trend for industrial tenants to relocate within the City to higher quality newer buildings in the west may have peaked[32], with a slowdown in consents for industrial buildings[33] and industrial land take up.

The industrial policies and zoning pattern in the new Christchurch District Plan generally promote the use and redevelopment of industrial land for industrial purposes to assist earthquake recovery and limit its use as a location for commercial activity. In general, the buffering of heavy industrial areas (Industrial Heavy zones) with lighter industrial surrounds (Industrial General or Industrial Park zones) is intended to help limit any significant noise, odour, traffic, or other adverse effects of industry on people and the environment.

Vacant Industrial Land

According to Council's Vacant Land Register, Christchurch has 319 (including CMU) hectares of zoned industrial land along with additional land zoned within the Specific Purpose Airport Zone (96 hectares) that enables industrial activities as a permitted activity[34].

The City also has two areas of land that are unzoned but are identified as Greenfield Priority Areas for Business in the Canterbury Regional Policy Statement. These areas total 50 hectares but are not zoned nor serviced so have been deemed not currently available for industrial development.

Table 20: Vacant Industrial Land by Zone in Christchurch[35]

Industrial / Specific Purpose	Vacant (part)	Vacant (whole)	Total (ha)
Industrial			
Commercial Mixed Use Zone	2	4	7
Industrial General	86	122	209
Industrial Heavy	160	197	358
Industrial Park	71	22	93

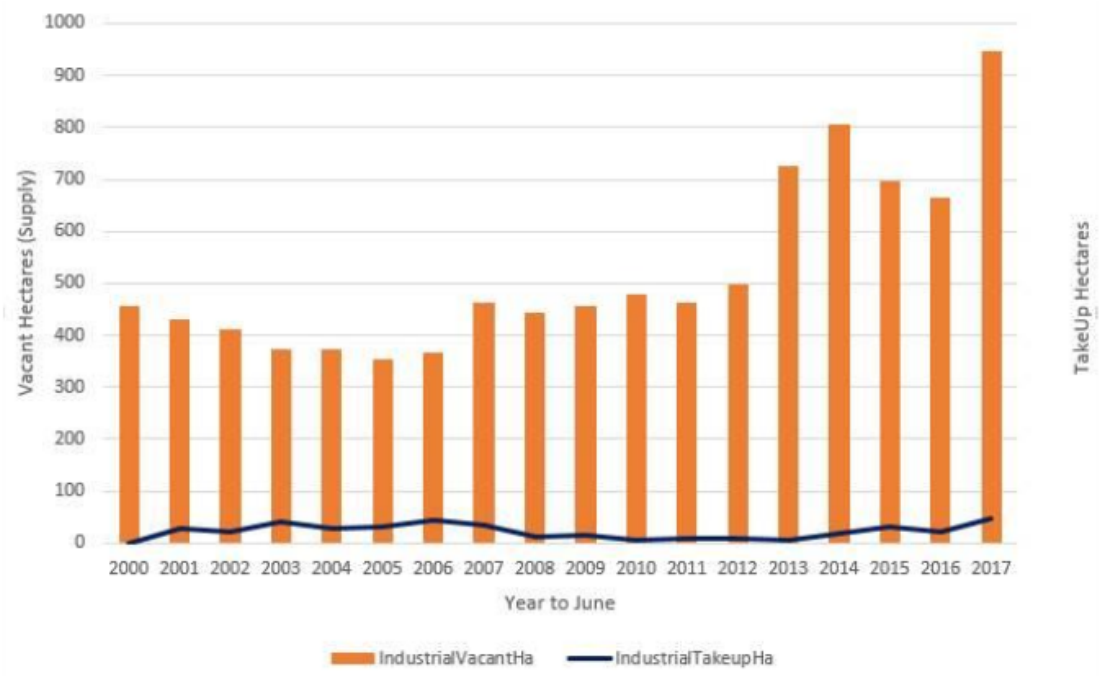
[32] JLL, Pulse, 3rd Quarter 2017.
[33] Property Economics (January 2018) Christchurch Capacity Assessment, Table 6, page 30.
[34] Note that this figure should be treated with caution. Subsequent desk-top analysis suggests the airport land supply is somewhat lower than indicated here. Confirmation has been sought from CIAL, the majority landowner in this Zone and any updates can be updated subsequently.
[35] Note that these figures are currently under review and any updates will be reflected in a February amendment.

711 Johns Road GPA (future potential)[36]			
Hawthornden and Russley Road GPA (future potential)[37]			
Industrial Total	319	345	667
Specific Purpose			
Specific Purpose Airport (Development Precinct) Zone	96	16	112
Specific Purpose Total	96	16	112
Christchurch Total	**415**	**361**	**799**

Source: CCC

CCC has been monitoring vacant industrial land and take up rates since 2000[38] and the results are shown in Figure 8.

Figure 8: Industrial Vacant Land Supply and Take-up[39]



Source: Adapted from GCP Urban Development Indicators Quarterly Monitoring Report June 2017[40]

The graph shows that the supply of vacant industrial land increased significantly from 2013 onwards as a result of plan changes rezoning land to industrial in the southwest of the city, first at South West Awatea and Wigram, then at Waterloo Business Park, Hornby and Hornby South. This was followed by significant additional areas being rezoned to industrial as a result of District Plan decisions becoming operative in 2017, at Belfast and in

[36] Identified as a Greenfield Priority Area for Business in the Regional Policy Statement
[37] As above
[38] Refer to section A11.5.1 of the Methodology in Appendix 11 for detail about the Vacant Land Register
[39] Note that the supply for 2017 indicated by this graph (912ha) is less than identified in this capacity assessment (1,010) due to inclusions in the latter of unzoned Greenfield Priority Areas for Business (50ha) and different methodologies for assessing vacant land supply in the airport zone.
[40] Note that the total vacant land shown here is slightly different from the totals included in elsewhere in this report. This is because of further ground-truthing of the 'vacant land register' since this graph was produced for the quarterly monitoring report.

the North West, and via Plan Change 84, which provides for light industrial uses at Christchurch Airport. The result is a very large supply of industrial land, allowing for considerable choice of location for the market.

In the decade of the 2000s, take-up of industrial land as indicated by the blue line fluctuated, with a peak of around 44 hectares in 2006 but trended downward after that time until post-earthquake increases in take-up in 2014 and 2015. Information on where this take-up of land has occurred is not readily available at this stage, although Indicator 5 of the first Urban Development Indications Quarterly Monitoring report[41] suggests that it is mostly in the southwest on the basis that vacant land in the east and south is still proportionately higher than in the newer industrial suburbs in the southwest.

The NPS-UD requires consideration of lot size in relation to business land, and "sufficiency" needs to reflect the demand for different types and locations of development capacity.

Table 21: Size distribution of vacant industrial land parcels (by %)Table 21 shows the size distribution of vacant commercial land in Christchurch City for each quadrant or zone.

Table 21: Size distribution of vacant industrial land parcels (by %)

Quadrant / Zone	<1,000m²	1,000m² – 5,000m²	5,000m² – 1ha	1ha – 2ha	2ha – 5ha	>5ha
Quadrant						
Central and West	0.4%	6.0%	12.5%	13.4%	27.0%	40.6%
East, South and South West	8.2%	17.9%	16.7%	14.3%	19.1%	23.7%
North and North East	0.3%	5.6%	7.1%	18.9%	41.5%	26.7%
Zone						
Industrial General	5.1%	13.4%	21.3%	19.7%	20.1%	20.5%
Industrial Heavy	0.6%	7.5%	10.5%	14.0%	26.9%	40.4%
Industrial Park	0.8%	6.4%	2.1%	13.5%	61.3%	15.9%
Commercial Mixed Use	19.9%	50.4%	29.6%	0.0%	0.0%	0.0%
Specific Purpose Airport	0.0%	0.8%	6.0%	11.3%	29.4%	52.5%
Total vacant industrial parcels (%)	1.9%	8.4%	11.9%	14.9%	29.3%	33.5%

Source: CCC Vacant Land Register

In reality, size of lots is only one element of demand for industrial land and will be strongly influenced by the type of activity under consideration, and the size of lots which the market makes available. Table 21 above indicates that there is existing choice in sizes of vacant lots (albeit more limited at the lower end of the range) and with capacity to subdivide larger sites to suit. Unsurprisingly, there are significant areas of large unsubdivided lots in industrial zones, and across each of the three main industrial zone types. There are also large unsubdivided areas within the airport business area, although the size distribution figures above for the airport zone should be treated cautiously, as lots are often not subdivided on airport owned land, but rather nominated sites are leased to occupants.

There are a range of smaller sized vacant sites in the east, and in and around the CBD (Central) area. This is consistent with subdivision patterns in these older industrial areas, and the types of activities that have historically located there. Both Christchurch City and Selwyn Districts have seen greater demand for large sites to accommodate buildings such as for the storage and distribution industries which can be up to or over one hectare in size. Sites of this size result in faster take-up rates of industrially zoned land, a factor which has probably contributed to low rates of vacant land in the wider Hornby area.

[41] http://greaterchristchurch.org.nz/assets/Uploads/SPR-NPS-UDC-Quarterly-Monitoring-Report-for-GCP-Committee-final.pdf

Selwyn District

In order to estimate the amount of supply in the Industrial (Business 2 Zones) the SCGM undertakes a desktop assessment of the rates database and building footprints and was undertaken for 2019[42]. In addition, as a ground-truthing exercise the Council has started monitoring industrial land within Rolleston and Lincoln to understand the rate of change. The results from any future surveys of floorspace will be incorporated in the next BCA.

In the following section, we present the results from the SCGM. These results have been modified to account for recent growth and overall, we consider that the results presented in this report provide a reasonable proxy of the supply currently available.

The following table presents the supply in terms of hectares of land and two key metrics:

- Vacant land - properties that have no floorspace or building footprint associated in 2016.
- Vacant Potential - properties that have low levels of floorspace and for which additional floorspace is enabled within the property (potential for redevelopment).

The following supply results exclude vacant floorspace within existing buildings. The initial results from Selwyn's monitoring suggest that this existing building vacancy is very low. The scale of the floorspace vacancy in the B2 zone is well below a natural level that is required to maintain a healthy functioning, efficient, market. Secondly, the redevelopment potential from fully developed properties[43] was not modelled. Given the age of buildings and relativity between full development level and plan enabled development, it is less likely that this capacity will be utilised even in the long term.

The plan-enabled industrial supply in the Business 2 zone is estimated to contain 142 hectares of vacant land and 37 hectares of vacant potential land, comprising between 142 and 179 hectares of available supply through to 2048.

Table 22: Vacant industrial land in Selwyn[44]

Industrial	Vacant	Vacant Potential	Total
Rolleston	364ha	48ha	412ha
Lincoln	13ha	0ha	13ha
Other	0ha	0ha	0ha
Total Zoned	377ha	48ha	425ha

Source: SCGM

Waimakariri District

The industrial land supply in the Business 2 zone is estimated to contain 109 hectares of vacant land and 52 hectares of Vacant Potential land.
The following supply results excludes vacant floorspace within existing buildings. The initial results from the JLL survey suggest that vacancy is very low at well below 5%. The scale of the floorspace vacancy in the B2 zone is well below a natural level that is required to maintain a healthy functioning, efficient market. Therefore, it is sensible to exclude this supply from the following assessment. Secondly, the redevelopment potential from fully developed properties[45] was not modelled. Given the age of buildings and relativity between full development level and plan enabled development, it is less likely that this capacity will be utilised even in the long term.

Table 23: Vacant industrial land in Waimakariri[46]

Industrial	Vacant	Vacant Potential	Total
Business 2 Zones	32ha	70ha	102ha

[42] Refer to the Market Economics Selwyn Capacity for Growth Model technical Report
[43] Fully developed is a property that has buildings and floorspace that exceeds the level achieved in the local market.
[44] Note that these figures are currently under review and may be subject to change
[45] Fully developed is a property that has buildings and floorspace that exceeds the level achieved in the local market.
[46] Note that these figures are currently under review and may be subject to change

Source: WCGM

Greater Christchurch

Table 2 below summarises the quantum of vacant land at a TA and Greater Christchurch level.

Table 24: Summary of vacant industrial land at a TA and Greater Christchurch level

	Vacant (Whole)	Vacant (All)[47]
Christchurch	361ha	799ha
Selwyn	377ha	425ha
Waimakariri	32ha	102ha
Greater Christchurch	770ha	1,326ha

The above table presents vacant land as a range. The lower figure in the range comprises the total area of wholly vacant industrial land within the districts. The upper figure represents the vacant land supply when under-utilized or partially vacant land capable of more intensive redevelopment is included.

[47] Vacant (all) includes wholly vacant and partly vacant sites in the context of Christchurch City, and wholly vacant and vacant potential in WDC and SDC

7. Availability of Development and Other Infrastructure

7.1 Introduction

This section considers the availability of Council and other infrastructure to service business land for the various time periods specified in 3.4(3) of the NPSUD.

7.2 Assessment of Availability of Infrastructure

Additional Infrastructure

"Additional infrastructure" as defined in the NPS and (as relevant to business growth needs) includes land transport, and networks operated for the purpose of telecommunications, and transmitting or distributing electricity or gas.

To determine whether 'additional infrastructure' is, or is likely to be, available to meet business growth needs, information was sought from identified providers of other infrastructure both directly (through survey, email, and phone communication) and indirectly (through information sourced from ChristchurchNZ)[48].
Enquiries were made to determine how the providers plan for growth and increased demand for infrastructure/services in those areas zoned for business activities in District Plans and/or identified for future growth in the Canterbury Regional Policy Statement and whether any of the business areas are constrained in respect of the infrastructure the organisation provides.

The information enabled councils to determine whether constraints would limit development and the availability of additional infrastructure over the next 30 years. In such circumstances, it would suggest that this land should be removed from or allocated to a later time period as part of plan-enabled capacity. Appendix 3 provides further information on additional infrastructure provision and funding systems for that infrastructure.
The assessment concludes that access to 'Additional infrastructure' is either available or likely to be available to service all business land needs over the next 30 years.

Development Infrastructure

"Development infrastructure" is defined in the NPS as 'network infrastructure for water supply, wastewater, or stormwater, and land transport (as defined in section 5 of the Land Transport Management Act 2003), to the extent that it is controlled by local authorities'. A standard term also used for "network infrastructure" is "bulk infrastructure". Both terms have the same meaning and exclude "local infrastructure" which is funded and provided by developers within their landholdings as development proceeds. Local infrastructure is usually subsequently vested in Councils to control and manage.

"Serviced" is not defined in the NPS-UD but is considered in this report as "serviceable by Council" i.e., there is capacity in the relevant network in the area which the developer may connect into. In some cases, the developer may need to provide a connection outside of their own landholding to reach that network, or where there is a wider community benefit Council may, if funding is available and allocated through its LTP, provide that connection, or enter into a cost sharing agreement with the developer to upsize that connection, to provide for other land to be serviced. It should be noted that some land is serviceable by Council, but there would be an issue if that land was being developed "out of sequence", where connections through intervening land are either not agreed or not yet in place. Such land is not included in the following table of vacant business land not serviced by Council infrastructure.

The approach to identifying the availability of development infrastructure involved reviewing plan-enabled business land with members of each council's infrastructure planning team, to identify any areas where a lack of development infrastructure could constrain development in the three-, ten- and thirty-year timeframes. During this process, both current and draft infrastructure planning and funding documents were reviewed.

[48] ChristchurchNZ (2017) Infrastructure Situation Report July 2017.

Analysis of development infrastructure shows that there are some areas of Greater Christchurch (notably in Christchurch City) that could be constrained by a lack of access to development infrastructure. These areas are not serviced at present, generally for either water supply or wastewater, although some areas are planned to be serviced in the medium term, as indicated in the current Long Term Plans. A few areas are not planned to be serviced by Council either in the medium or long term. Table 25 sets out the land in each of these categories, which are then discounted from supply for the relevant timeframes for the purposes of assessing sufficiency under the NPS-UD.

Development in some of these areas could be advanced by developers providing a connection outside of their landholdings to the City Council wastewater network (indicated by footnotes). There are however two areas where this cannot occur, either because the distance to the City Council's wastewater network is too great (Chaneys) or because there is inadequate capacity in the sewer in the area (Wairakei Industrial Park).

In Christchurch, the presence of aquifers across the City means that access to water supply may be obtained by drilling a well and obtaining a water right, so in general, a lack of access to a sewerage system (including for trade wastes or wet industry) is the only absolute constraint on industrial development. In the case of Chaneys, some dry industry is already established in the area relying on septic tanks, but this is not likely to be possible in the Wairakei ODP area for reasons of groundwater protection.

It should be noted that further business development is likely to lead to reductions in the level of service and capacity of transport infrastructure, resulting in increasing delays and congestion on the network, which could have a constraining impact on economic growth if not carefully managed. This will be considered further through long-term strategic planning.

The sequencing of residential development also influences the timing of when business land is viable to develop. This is evident recently in Selwyn District, where surrounding housing development needs to occur to establish the network infrastructure and critical population base to support the small Neighbourhood Centres in the Falcon's Landing subdivision and Geddes/Dryden Trust Special Housing Area and the Lincoln industrial park. These were either undeveloped or sit within partially developed 'greenfield' locations where sequencing of development and installation of infrastructure, including water and wastewater services, has yet to reach the property boundary of the identified commercial or industrial clusters.

In the context of Waimakariri District, there are no identified constraints in respect of development infrastructure. The Council's commitment over the past decade to major investment in infrastructure to cater for growth means that when considering development in the district over the next 30 years, the 'backbone' of the major infrastructure is already in place. In respect of transport, work is programmed over the next two to three years to improve the arterial link from the west of Rangiora and Southbrook commercial area to the State Highway and Kaiapoi via Fernside and Flaxton Roads. However, this does not preclude development occurring.

Table 25: Vacant business land not serviced by development (network) infrastructure – Christchurch City

Geographic Area	Short Term – Not Serviced		Medium Term (LTP[49]) – Not Serviced		Long Term (Infrastructure Strategy[50]) – Not Serviced	
Industrial						
Chaneys (IH)	47.00[51]	Selected sites can now connect to a new WW LPSS system to discharge to Kainga (37 ha). Sewer discharge restriction of 0.05 L/s/ha in place (Consent Notice on Title Deed). No WS services available.	47.01	No provision to provide WW capacity to remaining sites. No servicing provision in LTP.[52]	47.01	No provision to provide WW capacity to remaining sites. No WS servicing provision in Infrastructure Strategy
North Belfast (IG)	78.87	WW and WS Network links to be provided by developer. WS and WW pump station capacity available. Note: Sewer Limit Discharge Area. i.e., WW discharge restricted to 0.09 L/ha/s.	-	Provision in LTPs on staged basis for increased capacity of WW and WS pump station infrastructure to support development. Developer to provide WW and WS network to link to CCC Infrastructure in Belfast. No provision in LTP to provide network connections on behalf of the developer. Note: Sewer Limit Discharge Area i.e., WW discharge restricted to 0.09 L/ha/s.	-	
Wairakei Rd west of Stanleys Rd (IP)	40.70	Connection to CCC WW and WS network to be provided by developer.	40.70	No provision in LTP to provide network connections on behalf of developer	40.70	No provision in Infrastructure Strategy to provide network

[49] Info relates to both 2015-2025 and Draft 2018-2028 LTPs unless otherwise specified. Current and draft LTPs may specify programme funding only or alternatively set out individual projects.
[50] Current and draft IS may specify programme funding only or split out individual projects.
[51] Note though those industrial activities currently operate successfully from this zone. It is effectively a non-serviced rural industrial zone
[52] Too distant from Council infrastructure for developer connection to WW network as well as inadequate capacity in WW pump station.

Geographic Area	Short Term – Not Serviced		Medium Term (LTP[49]) – Not Serviced		Long Term (Infrastructure Strategy[50]) – Not Serviced	
		Developer to provide WW and WS network to link to CCC Infrastructure. Note: Sewer Limit Discharge Area. i.e., WW discharge restricted to 0.09 L/ha/s.		Note: Sewer Limit Discharge Area i.e., WW discharge restricted to 0.09 L/ha/s.[53]		connections to CCC Infrastructure. Note: Sewer Limit Discharge Area i.e., WW discharge restricted to 0.09 L/ha/s.
Memorial Ave MAIL (IP)	22.76	WW network connection available. Note: Sewer Limit Discharge Area i.e., WW discharge restricted to 0.09 L/ha/s Developer to provide water network link main through site to connect to the CCC water network.	-	Provision in LTP to provide additional WW infrastructure capacity to support development post 2023 (Avonhead Road wastewater upgrade). Note: Sewer Limit Discharge Area i.e., WW discharge restricted to 0.09 L/ha/s No provision in LTP to provide WS network link main through site.	-	-
SW Hornby IH rural wastewater irrigation area (west of Shands Rd and south of IG).	61.5 ha	WW and WS service being installed by developer. Note: Sewer Limit Discharge restricted to 0.09 L/ha/s	-	-	-	-
Springs Road (IH)	15.92	No WW or WS service.	15.92	Developer to provide WW and WS network to link to CCC infrastructure in Halswell Junction Road. No provision in LTP to provide network	15.92	Developer to establish WW and WS network to link to CCC infrastructure in Halswell Junction Road. No provision in LTP to provide these

[53] Limited capacity in WW system for developer to connect into.

Geographic Area	Short Term – Not Serviced		Medium Term (LTP[49]) – Not Serviced		Long Term (Infrastructure Strategy[50]) – Not Serviced	
				connections on behalf of the developer. Note: This was a condition of the plan change i.e., that the developer will provide linkage to Halswell Junction Road.[54]		networks on behalf of the developer.
Awatea (south of motorway) (IP)	10.47	WS service available in Mcteigue Road. WW service available in Bill Harvey Drive. Developer to provide WW and WS network to link to CCC infrastructure. Note: Sewer Limit Discharge Area i.e., WW discharge restricted to 0.09 L/ha/s	10.47	No provision in LTP to provide network connections on behalf of the developer.[55]	10.47	No provision in LTP to provide network connections on behalf of the developer. No provision for WW servicing in IS.
Total Industrial Not Serviced	277.22		114.10		114.10	
Greenfield Priority Areas[56]	Area not serviced (ha)	Notes	Area not serviced (ha)	Notes	Area not serviced (ha)	Notes
711 Johns Road	15		15	Limited WW discharge capacity available, no WS planned in LTP	15	No provision in Infrastructure Strategy to extend CCC WW and WS network into this area.

[54] Could be serviced in MT and LT by developer funded connection to Council system (restrictions will apply due to capacity limits of WW pump station).
[55] Could be serviced in MT and LT by developer funded connection to Council system.
[56] I.e., not yet zoned and therefore not considered part of supply except in long term.

Geographic Area	Short Term – Not Serviced		Medium Term (LTP[49]) – Not Serviced		Long Term (Infrastructure Strategy[50]) – Not Serviced	
Hawthornden Road	35.00		35.00	Some WW and WS capacity available (modelling not completed to confirm). Developer to provide WW a network to link to CCC infrastructure in Avonhead Road. Developer to provide WS link main from Avonhead Road to Hawthornden Road. No provision in LTP to provide network infrastructure on behalf of Developer.	35.00	No provision in Infrastructure Strategy to extend CCC WW and WS network into this area.
Total Greenfield Not Serviced	50		50		50	
Commercial						
Belfast/Northwood (CC zone)	9.44	No WW or WS network infrastructure, cap on traffic until Northern Arterial in place.	--	Provision in LTP to increase WS supply capacity to provide for this area. Network WW infrastructure capacity could be provided by Council post 2023 (programme funding in each case). Northern Arterial expected to be opened around 2021.	--	
Total Commercial Not Serviced	9.44		0.0		0.0	

Advice Note:
There are no identified infrastructure constraints for the balance of vacant and partly vacant land within already built-up Industrial and Commercial Zones that would preclude development.

Table 26: Vacant business land not serviced by development (network) infrastructure – Selwyn District

Geographic Area	Short Term – Not serviced		Medium Term (in LTP) – Not serviced		Long Term (Infrastructure Strategy) – Not serviced	
	Area not serviced (ha)[57]	Notes	Area not serviced (ha)	Notes	Area not serviced (ha)	Notes
All vacant business land is able to be serviced for each time period.						

[57] The size of the business areas has been calculated off GIS, with the overall size being inclusive of roads, reserves and utilities.

Table 27: Vacant business land not serviced by development (network) infrastructure – Waimakariri District

Geographic Area	Short Term – Not serviced		Medium Term (in LTP) – Not serviced		Long Term (Infrastructure Strategy) – Not serviced	
	Area not serviced (ha)[58]	Notes	Area not serviced (ha)	Notes	Area not serviced (ha)	Notes
All vacant business land is able to be serviced for each time period.						

[58] The size of the business areas has been calculated off GIS, with the overall size being inclusive of roads, reserves and utilities.

8. Suitability of supply

8.1 Introduction

The NPS-UD requires an assessment of whether any identified development capacity for business land is suitable for each business sector. A local authority has discretion on how it determines whether development capacity is suitable, but must, as a minimum, include suitability in terms of location and site size. As noted earlier, Councils are to engage with the development sector and infrastructure providers.

8.2 Methodology

The multi-criteria analysis (MCA) approach assesses clusters against attributes sought generally by the relevant development sector. For industrial activities, it is difficult to imagine a site so constrained that it would not be possible to use the site for an activity like storage units, stockpiling of landscaping materials or equipment hire.

An alternative option is to undertake a site level assessment to gain a more detailed understanding of the suitability of individual sites for development. Each of the Territorial Authorities have elected to undertake a broad area assessment for consistency. The MCA is a broad picture of the relative level of constraint on particular areas based on information presently known to Council planning staff. The methodology is outlined in Appendix 4 with the results discussed in Appendix 5. These scores reflect the constraints that would apply to a generic commercial or industrial development anticipated by the relevant zone and would likely change if the requirements of a specific activity were considered.

Sites listed below as not suitable and recommended for removal from development capacity for the purposes of this assessment are sites that either:

a) meet the very high test of being so constrained that they are very unlikely to be suitable for the majority of industrial or commercial activities anticipated by the zone; or
b) have a resource consent with a high likelihood of implementation for a non-commercial or non-industrial activity.

8.3 Suitability for Commercial Development

Christchurch City

Most commercial-zoned sites in Christchurch City are likely to be suitable for some form of commercial activity. Almost all of the centres are on arterial roads with good visibility. The highest scoring centres were generally established centres in residential areas with lower natural hazard risks and few contaminated sites. Lower scoring centres were generally:

a) greenfield emerging centres where servicing still needs to be established and/or the residential catchment has not developed or developed to the anticipated capacity (noting that whilst these centres may not be suitable to develop now, they are likely to be in the future); and
b) established centres with more significant land contamination or natural hazards issues.

The centres listed in Table 28 have vacant land that is considered to be not suitable for the reasons discussed below.

Table 28: Centres with vacant land that is considered not suitable for commercial development

Centre	Area not suitable (m^2)	Reason
Land on the SW corner of Main North Road and Radcliffe Road	4,750	Site has resource consent and is being developed for a retirement village
32A Central City Business	2,048	Site has recent consent to rebuild a historic church.

32F Central City Mixed Use	5,058	Three sites with recent consents for apartment complexes.
50A Redmund Spur	3,176	Centre is not connected to the road network or servicing, is relatively isolated and does not seem at the moment to have a sufficiently large existing residential catchment to support most commercial activities.
Total	15,032	

Redmund Spur was the only centre where none of the vacant land was considered suitable. Two other emerging greenfield centres (Highfield North and Highfield South) scored less than 80 (out of 104) because the surrounding residential catchment was considered not sufficiently developed to support commercial development at the current time.

The two established centres that scored less than 80 (out of 104) are Ferrymead and New Brighton. This reflects in part the fact that they are low-lying coastal centres in flood-prone areas where there is relatively high liquefaction risk and, in the case of Ferrymead, past uncontrolled filling that may increase the likelihood of contaminated soils. While vacant land in these centres may be suitable to develop in the shorter term, over a longer horizon there is need to consider the increasing risk to these centres posed by sea-level rise and increased costs for developers associated with mitigating those risks (for example, by the need to raise floor levels).

Three alternate scenarios considered most likely to affect the suitability of land supply in Christchurch City over the next 30 years and which will be the subject of future BCAs are:

a) Vacant land in coastal centres such as Ferrymead and New Brighton becoming increasingly at risk of coastal hazards.
b) A higher-than-expected take-up of residential activities in mixed-use zones, particularly in zones like the CCCMU where a number of recent consents for apartments have been issued in a cluster around the North Frame. Under this scenario the proportion of mixed-use land assumed to be in residential use may increase.

Greenfield emerging centres develop more quickly than anticipated meaning that centres which are were previously considered constrained by a lack of catchment or infrastructure would be more likely to come on-stream e.g., Redmund Spur.

It is recommended that the land supply in these areas is closely monitored to inform future capacity assessments.

Selwyn District

The MCA provided scores for the nine broad areas (Business 1 and Neighbourhood Centres) where there is plan enabled capacity, with there being little variation and most areas scoring highly. This signals that although some of the business clusters had constraints, these are unlikely to be so significant that it makes the land unsuitable to develop from a market perspective.

Lower scoring centres were generally:

- Broadly older centres (Lincoln and Prebbleton score of 3), which perform poorly for Land Assembly because of the fractured nature of land that may slow development in the areas.
- The Land Remediation score for the large centres (Rolleston Town Centre, Lincoln Town Centre and Prebbleton Town Centre) was lower than the smaller centres. These three centres have potential land contamination and/or fill issues which contribute to the lower score (3).
- Prebbleton town centre has potential issues associated with onsite stormwater management where part of the site may be managed on site while other areas fall within the catchment of an existing integrated scheme.
- The Planning Constraints criteria score for the large centres (Rolleston Town Centre, Lincoln Town Centre and Prebbleton Town Centre) was lower than the smaller centres. This variation is attributed to additional planning rules within the Key Activity Centre's of Rolleston and Lincoln that require an

assessment of urban design and restrictions on activity types in these areas, which reduces the flexibility of land use for some types of commercial activity (for example Large Format Retail).
- The Lincoln Town Centre also has a lower visibility score, which is due to a portion of the town centre being located behind Gerald Street.

Overall, the business clusters scored highly on average across the board, establishing that there appear to be few constraints to the market to develop vacant land or to redevelop existing sites. This is consistent with the advice provided at the one-on-one engagement discussions held with the significant landowners who signalled an interest in meeting[59].

Waimakariri District

The MCA was completed for seven broad areas that have commercial zones (Business 1 and Business 4).

The scores under the Accessibility criteria are consistent across most areas, with only one area scoring a 3 (Ravenswood). In this instance, the accessibility of the area is expected to improve when a planned road is connected to State Highway 1 (in the operative District Plan). The uniformity of the scores means that this criterion is likely to have little impact when differentiating between areas.

Under the Land Assembly criteria there was larger variation in scores than most of the other criteria. Broadly older centres (Rangiora and Kaiapoi Town centres score of 2) perform poorly because of the fractured nature of land which may slow development in the areas. The newer areas (Ravenswood and Kaiapoi Silverstream score of 4) have not been subject to subdivision / purchase by multiple landowners and will be more able to readily supply land to meet the demand of the market.

The Remediation and Infrastructure criteria have the same score for all of the broad areas. Under the Natural Hazards criteria there is the most variation amongst all the centres assessed. The worst score is Kaiapoi Town Centre (score 1) and Kaiapoi Silverstream (score 2), which are both identified as high hazard areas. The remaining areas have no significant hazards.

The scoring against the Planning Constraints criteria is consistent across most areas, with only one area scoring a 3 (Rangiora Town Centre). There are some planning rules that necessitate an urban design assessment or restrict parking and pedestrian access in Rangiora which reduces the flexibility of the land in this area for some types of commercial activity. Finally, the scoring under the Other Development Constraints criteria is the same score for all the broad areas.

Overall, the business clusters scored highly on average across the board, establishing that there appear to be few constraints to the market to develop vacant land or to redevelop existing sites.

Greater Christchurch

The preceding assessment indicates that all land is suitable across the TAs, with some exceptions in a Christchurch City context. As stated earlier, this reflects the nature of the assessment and feedback from the development sector that unless a site-by-site assessment is completed of costs and all possible scenarios, it is unlikely that land will be found to not be suitable.

8.4 Suitability for Industrial Development

Christchurch City

Most industrial-zoned sites in Christchurch City are likely to be suitable for some form of industrial activity. There was not significant variability between the scores for most of the clusters which fell into an approximately 10-point range near the top of the scale. Almost all of the clusters were on arterial roads with good access to the rail network, airport or port. Most established clusters had some contaminated sites and some natural hazard related constraints but generally not to the point that it was considered that development would not be suitable.

[59] Davie Lovell-Smith on behalf of BHL and Hughes Developments Ltd, Gillman Wheelans Ltd, Nimbus Group; Lincoln Developments Ltd, Denwood Trustee, Suburban Estates, Sparr Developments Ltd and White Gold Ltd.

Limited bulk servicing provision to some clusters affected the kinds of industries that could be expected to locate in those clusters but did not limit suitability overall. For example, a number of industrial clusters around southwest Hornby have limits on the amount of wastewater that can be discharged into the public wastewater network. This would constrain industries that rely on significant wastewater discharges but would not constrain "dry" industries like storage, light manufacturing, or logistics.

The two lower-scoring clusters are identified as greenfield priority areas (GPAs) for business in the CRPS but were not rezoned in the last District Plan review. While the two areas are more constrained than other clusters because they are still zoned for rural activities, are generally not serviced, and have other infrastructure-related constraints, they are still considered suitable. Even though industrial activities would require a non-complying a resource consent application, the application would have some policy support in the CRPS.

The following clusters have vacant land that is considered not suitable for the following reasons.

Table 29: Clusters with vacant land that is considered not suitable for industrial development

Cluster	Area not suitable (m^2)	Reason
26C Bower Avenue	1,896	Several sites have very significant natural hazards constraints.
46C Woolston / Ferrymead	5,185	Site of a demolished apartment complex intended to be rebuilt
52B Lyttelton	2,529	Site has recent consent to rebuild a historic fire station
Total	9,610	

In the context of the significant supply of industrial land within Christchurch City identified in the preceding section, this one hectare of 'unsuitable' land would appear to be insignificant.

Selwyn District

The MCA evaluations signal that all plan-enabled sites in Selwyn are likely to be suitable for some form of industrial activity.

The scores against most of the criteria are uniformly high across both broad areas (i.e., no difference on the score for Accessibility to the Transport Network, Land Assembly, Land Remediation Requirements, Natural Hazards, Planning Constraints and Other Development Constraints). It was only against one criterion (Location-specific Infrastructure) that there was a distinction between the two broad industrial areas. The Lincoln Industrial Hub (Business 2B Zone) has a lower score because of the onsite stormwater management requirements in this area and the likelihood that this will need to be managed within an integrated scheme developed at the same time as the adjoining residential subdivision.

In summary, the MCA scores show that there is very little difference between the broad areas that are zoned industrial and establishes that there are few constraints to the market to develop vacant land or to redevelop existing sites from a general suitability perspective.

Waimakariri District

The MCA evaluation provided scores for seven clusters that have an industrial zoning (Business 2). In summary, there is more variation in the scores (although the differences are small) for the industrial clusters in Waimakariri than the commercial broad areas.

The scores for accessibility criteria are consistent across most areas, with three areas scoring a 3 (Rangiora, Kaiapoi 1, Ravenswood). These areas are expected to be connected to main roading infrastructure in the future (either via Collector Road, Strategic Road, Arterial or Urban State Highway).
Scores against the Land Assembly criteria had the larger variation than most of the other criteria. Broadly older centres (Rangiora and Kaiapoi Town centres score of 2) perform poorly because of the fractured nature of land which may slow development/redevelopment in the areas. While the newer areas (Ravenswood score of 4) have not begun land division and will be more able to readily supply land to meet the demand of the market.

The scores against the Remediation criteria are the same for most areas. Only Rangiora area has a lower score of 2, which is related to the potential contamination and landfill in the area.
Scores against the Infrastructure criteria are the same for all the clusters.
The most variation in scores was against the Natural Hazards criteria. Kaiapoi Centre and Kaiapoi Smith Street (score 1) had the lowest scores which reflects their location in high hazard areas. The Rangiora and Southbank areas are identified as medium hazard areas which results in a score of 2. The remaining areas have no significant hazards.

In summary, the MCA scores show that there is very little difference between the clusters that are zoned industrial and establishes that there are few constraints to the market to develop vacant land or to redevelop existing sites from a general suitability perspective.

Greater Christchurch

The preceding assessment indicates that all land is suitable across the TAs, with some exceptions in a Christchurch City context. Like Commercial land, this reflects the nature of the assessment and feedback from the development sector.

9. Sufficiency of Business Land

9.1 Introduction

The final step in the business development capacity assessment is to establish whether the amount of suitable, serviced development capacity is sufficient to meet the estimated demand for different types and locations of business land and floor area.

Sufficient/sufficiency is defined in the NPS-UD as "the provision of enough development capacity to meet housing and business demand, and which reflects the demands for different types and locations of development capacity".

The results are set out below.

9.2 Commercial[60] Land Sufficiency

Christchurch City

Comparison of projected demands against available plan-enabled supply indicates that Christchurch City has sufficient commercial land over the short and medium terms. However, a projected shortfall of 110.1 hectares is projected over the long term. This reflects the shift in the economy's employment composition to a projected higher proportion of commercial employees[61]. It must be borne in mind that the sufficiency of commercial land development depends inherently on the assumptions used to calculate demand and supply projections[62]. A higher average building storey height assumption would obviously have a bearing on overall commercial land sufficiency citywide, but particularly for the Central City where taller buildings are more likely.

Table 30: Sufficiency of commercial land in Christchurch City

Christchurch City	Short Term Land Requirements	Medium Term Land Requirements	Long Term Land Requirements
Commercial Offices	25	61	157.9
Retail	8.0	23.6	53.7
Total Demand	33	84.6	211.6
Total Supply	103	103	103
Less land that is not serviced[63]	9.4	0	0
Less land that is not suitable[64]	1.5	1.5	1.5
Sufficiency	59.1	16.9	-110.1

Selwyn District

A comparison of projected demand against available plan-enabled supply utilising the wholly vacant land measure indicates that Selwyn has sufficient commercial land in the short term, but that there is a projected under-supply within the medium term of three hectares. A shortfall of 31 hectares is projected in the long term, once again using the wholly vacant land supply measure, including within the townships of Lincoln and West Melton. Vacant Potential supply may provide additional capacity sufficient to meet medium term needs, although it is dependent upon more optimal uses of business land. The variations between the Vacant and Vacant

[60] Land available for offices, commercial services and retail activities
[61] Property Economics, Christchurch Business Land Capacity Assessment (2018) page 57-58.
[62] Note that the Christchurch District Plan enables buildings of 28m (around 7 storeys) in the Central City Business Zone and 17m (4 storeys) in the Central City Mixed Use Zone, as a permitted activity.
[63] i.e., excludes land that has a servicing constraint over the short, medium or long term.
[64] i.e., excludes land that has been assessed by CCC as not suitable.

Potential supply estimates emphasise the need for regular monitoring to gauge the extent to which commercial land is utilised or redeveloped to more optimal ratios in Selwyn than what is currently the case.

Table 31: Sufficiency of commercial land in Selwyn District

Selwyn District	Short Term Land Requirements	Medium Term Land Requirements	Long Term Land Requirements
Total Demand	6ha	18ha	50ha
Total Supply	19ha	19ha	30ha
Sufficiency	13ha	1ha	-20ha

Waimakariri District

Comparison of projected demands against available plan-enabled supply indicates that Waimakariri has a potential shortfall of land of around 17ha in the long term (when considering only vacant commercial land) as outlined in Table 32. If the underutilization of existing commercial land is included into the total supply available, this changes the overall result from a shortfall of 17ha to an overprovision of land by 1ha.

Table 32: Sufficiency of commercial land in Waimakariri District

Waimakariri District	Short Term Land Requirements	Medium Term Land Requirements	Long Term Land Requirements
Total Demand	4ha	12ha	32ha
Total Supply	36ha	36ha	63ha
Sufficiency	32ha	24ha	31ha

Greater Christchurch

The results on sufficiency at a Greater Christchurch level indicate a sufficient supply of suitable commercial land to meet demand in the short and medium term. In the long term, there is an apparent shortfall. However, as stated above, this is premised on a number of assumptions to calculate demand and supply and further testing of these assumptions will be required together with active monitoring of take-up rates and projected changes in demand. The redevelopment of under-utilised sites and use of existing vacant floorspace may also affect the extent to which there is sufficient land.

Table 33: Sufficiency of commercial land in Greater Christchurch

Greater Christchurch	Short Term Land Requirements	Medium Term Land Requirements	Long Term Land Requirements
Total Demand	43ha	114.6ha	293.6ha
Total Supply	150.1ha	156.5ha	194.5ha
Sufficiency	107.1ha	41.9ha	-99.1ha

9.3 Industrial Land Sufficiency

Christchurch City

Table 34: Sufficiency of industrial land in Christchurch City

Christchurch City	Short Term Land Requirements	Medium Term Land Requirements	Long Term Land Requirements
Total Demand	18.4	35.7	119.2
Total Supply	778	778	778
Less land that is not serviced[65]	277.22	114.10	114.10
Less land that is not suitable[66]	0.96	0.96	0.96
Sufficiency	481.42	627.24	543.74

Selwyn District

Table 35: Sufficiency of industrial land in Selwyn District

Selwyn District	Short Term Land Requirements	Medium Term Land Requirements	Long Term Land Requirements
Total Demand	42ha	131ha	347ha
Total Supply	377ha	377ha	425ha
Sufficiency	333ha	246ha	78ha

Waimakariri District

Table 36: Sufficiency of industrial land in Waimakariri District

Waimakariri District	Short Term Land Requirements	Medium Term Land Requirements	Long Term Land Requirements
Total Demand	12ha	31ha	79ha
Total Supply	32ha	32ha	102ha
Sufficiency	20ha	1ha	23ha

Greater Christchurch

At a Greater Christchurch level, there is a significant quantum of industrial land, based on an assessment of fully and part vacant land, sufficient to meet long term demand. If the plan enabled capacity is limited to wholly vacant sites, the assessment projects a shortfall of industrial zoned land in the long term of 37 ha at a Greater Christchurch level. However, this does not take account of partially vacant sites or redevelopment potential of existing developed sites, which in many areas makes a significant contribution to land supply. Nor does it consider land that is not serviced but will continue to be utilised for industrial activities (e.g., Chaneys), and land that may be serviced as a result of provision by developers and/or the reconsideration of funding priorities. There remains a need for monitoring and future capacity assessment to consider the supply at a finer grain and whether it is meeting the needs of specific industries.

Table 37: Sufficiency of industrial land in Greater Christchurch

Greater Christchurch	Short Term Land Requirements	Medium Term Land Requirements	Long Term Land Requirements

[65] i.e., excludes land that has a servicing constraint over the short, medium or long term.
[66] i.e., excludes land that has been assessed by CCC as not feasible.

Total Demand	72.4ha	197.7ha	545.2ha
Total Supply	918.8ha	1,072.9ha	1,189.9ha
Sufficiency	846.4ha	874.2ha	644.7ha

10. Conclusions and Recommendations

10.1 Christchurch City

Industrial Land

Overall, the capacity assessment indicates that Christchurch City is likely to have sufficient, suitable, and serviced industrial land supply to meet projected needs for the next 30 years. There is 778 hectares of vacant industrial land in Christchurch City that is zoned for industrial purposes along with a further 50 hectares of rural zoned land that is identified in the Canterbury Regional Policy Statement as potential future industrial land. Whilst some of this land (around 114 hectares) has infrastructure servicing and other constraints over the long term that may limit the ability to bring the land to market over the planning period, even excluding this land would still leave a balance of 627 hectares available to meet a projected long-term demand for 119 hectares of industrial land in the city. CCC considers some of this constrained land will nonetheless also be utilised for industrial purposes over the long term as a result of developer led provision of infrastructure, reconsideration of infrastructure funding priorities and / or because some land can be used for industrial purposes, even without being fully serviced.

There is considered to be a good distribution of industrial land, in a range of property sizes and tenures, around the City to meet foreseeable demands. Continued monitoring of vacant land and take-up rates around the city will be important to understand the locations of greatest demand and whether land supply is being responsive to those demands over time.

Based on this assessment, there is no evidential need to identify new industrial land supply in the short, medium, or long terms. Based on this over-supply, neither does there appear to be a need to rezone the two rural areas currently identified in the CRPS as potential future industrial locations.

Commercial Land

For Commercial land, there will be a need for additional capacity in Christchurch City. Long term, the Christchurch area is estimated to require an additional 110 hectares above the current zoned provision.
Given the relationship between population and household growth and commercial land demands, it is appropriate that this additional commercial land provision be focussed in centres to serve residential growth areas including the central city, key activity centres, and new commercial centres which may be developed to support new suburban residential communities.

The Future Development Strategy will need to consider how to respond to this shortfall and which should consider the following:

- The extent to which existing industrial land in and around the Central City might be anticipated to meet future demands for commercial activity over the medium and longer term i.e., as older industrial land is naturally redeveloped for higher value commercial (and residential) uses.
- Opportunities for additional development capacity to be provided through making more efficient use of existing commercially zoned land including through the Housing and Business Choice Plan Change that will enable significant more capacity in and around commercial centres for office and other activities above ground floor. The city centre for example, will have significantly greater height limits, enabling significantly more capacity.
- Opportunities to provide additional commercial capacity through the redevelopment of surplus brownfield industrial land for commercial or mixed uses.

10.2 Selwyn

Industrial Land

For Selwyn, the modelling suggests that there will be more than sufficient supply to meet the demand for industrial land through the medium-term and the long-term. The increased industrial demand is from better understanding of freight demand while the increased capacity is met through recent private plan changes. The

plan-enabled land is serviced and relatively free from any development constraints that may limit its suitability to be developed or redeveloped for some form of industrial activity. Ongoing stakeholder engagement and monitoring of the uptake of industrial land is required to quantify whether this projected over-supply reflects market realities. Based on this assessment, there is a need to strategically plan for new industrial land in the long-term, which is largely freight-based land.

Commercial Land

For Selwyn, the modelling of commercial demand and supply estimates are indicating that there is insufficient land available into the long-term. The amount of business land improves when vacant potential capacity is utilised, however, this assumes that business land will be used more optimally in the future.

The Future Development Strategy will need to consider how to respond to this shortfall and which should consider the following:

- Ability of Vacant Potential land supply to meet retail and industrial demand and if not, where this potential shortfall could be accommodated.
- Regular ongoing monitoring of population and employment growth to reality check the rates of uptake and optimisation of business zoned land.
- Consider the individual demand and supply requirements for commercial land at a township level in Selwyn District.
- Consideration of the supply of land for specific types of commercial development, having regard to the size of parcels (e.g., small format / large format retail). This has not been addressed as part of this capacity assessment for SDC.

10.3 Waimakariri

Industrial Land

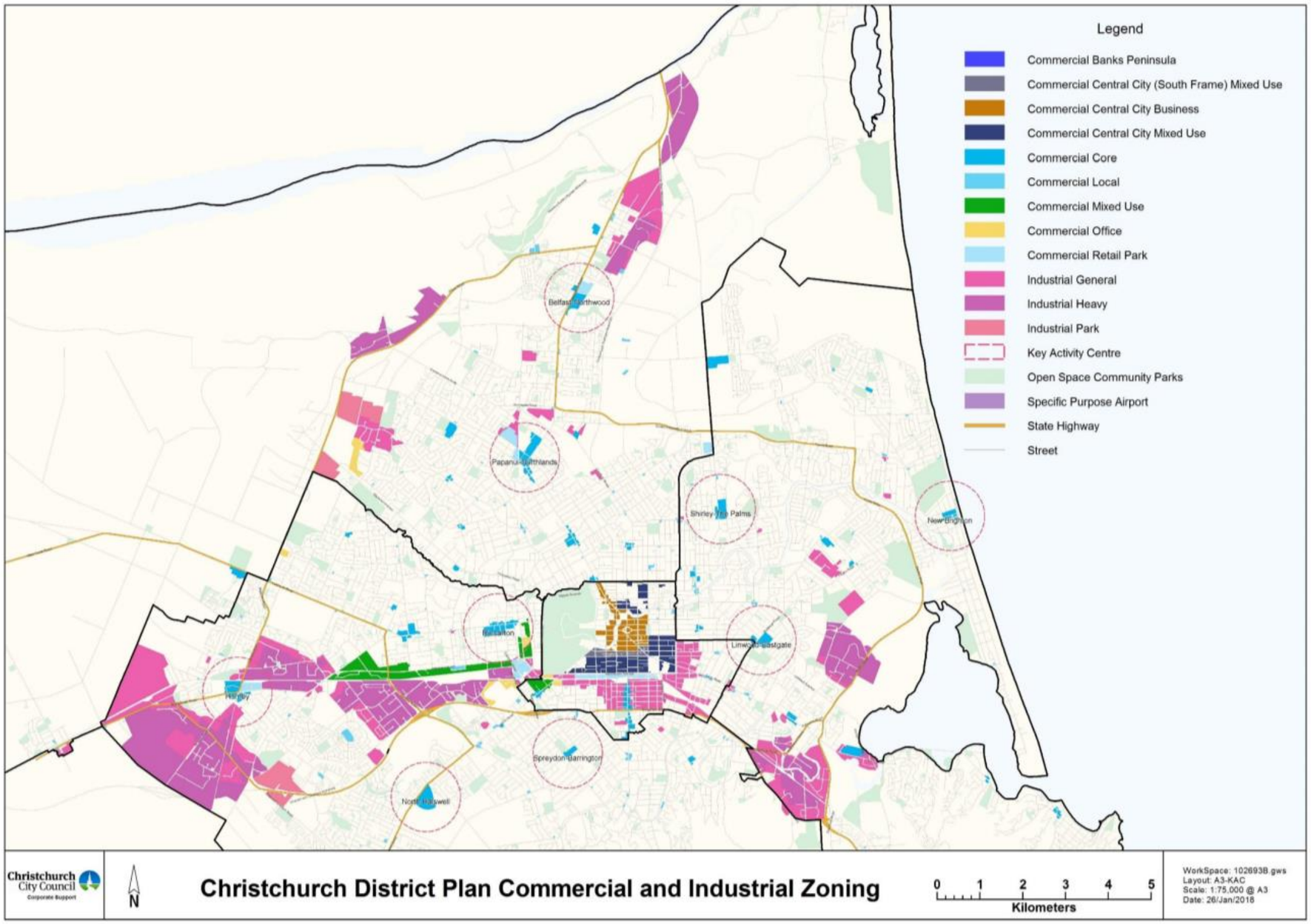
For Waimakariri, the capacity assessment indicates that there is likely to have sufficient, suitable, and serviced industrial land supply to meet projected needs for the next 30 years. However, there are some questions around the distribution of existing industrial land supply, in order to meet foreseeable demands. Monitoring of vacant land and take-up rates around Rangiora and Kaiapoi will be important to understand the locations of greatest demand and whether land supply is being responsive to those demands over time.

Based on this assessment, there is no evidential need to identify new industrial land. However, if ongoing monitoring suggests that existing land supply is not being brought to market in a timely manner, this position may need to be reconsidered in future capacity assessments.

Commercial Land

For Waimakariri, the capacity assessment indicates that there is likely to have sufficient, suitable, and serviced commercial land supply to meet projected needs for the next 30 years.

Appendix 1 – Christchurch District Commercial and Industrial Zoning



Appendix 2 – Report on Availability of 'Development Infrastructure'

This section supplements Section 7 above by providing further information on the actual and likely availability of development infrastructure for which the Council is responsible i.e., water supply, wastewater, stormwater and land transport, to support the development of land in the short, medium and long term, as required in the NPS-UD. Development infrastructure is defined in the NPS as meaning "network infrastructure" to the extent to which it is controlled by local authorities.

The infrastructure assessment considered whether any plan enabled capacity is:

a) currently serviced with development infrastructure, or;
b) to be serviced as a result of funding identified in Council's Long Term Plan (LTP): or
c) indicated as being able to be serviced in the longer term within the Council's Infrastructure Strategy.

A2.1 Christchurch City

A2.1.2 Availability of Development Infrastructure

The following sections summarise potential infrastructure constraints for Christchurch City.

Wastewater

For several greenfield areas, infrastructure is not currently available on the ground because of the nature of the funding and provision process, with development infrastructure only being provided when it is needed. This includes North Belfast Industrial General zone, and the MAIL site on Memorial Avenue. It will however be available when development begins, i.e., in the medium term, due to being included in the LTP either as specific projects or as programme funding. Some greenfield business areas are not currently programmed to be provided with wastewater servicing until sometime between 2019 and 2048. I.e., public sewer provision towards these areas might occur within the next 10 years but equally might not, depending on take-up of industrial land. These areas can be serviced in the medium term.

Parts of the City, especially peripheral ODP areas on the western side of the built-up area will continue to have "dry industry" only rules even when they are able to be serviced. This is to prevent wet industry in these locations because of distance to the Bromley treatment plant. Wet industry, because of greater flows and/or high concentration of wastewater, takes up capacity further down the system, and leads to greater corrosion on the system thereby shortening its lifespan. A range of industrial uses are still possible.

Two further zoned industrial areas, Chaneys and the Wairakei Road west of Stanleys Road area may not be serviced by bulk sewers within the 30-year period, meaning that satellite treatment systems might need to be considered for wastewater if development is to proceed earlier than this.

The greenfield priority areas still zoned rural are only included in land supply for the long term as they have servicing constraints, even in the long term.

Water Supply

Several water supply wells service the city by drawing on the aquifers below it, and they are all interconnected by supply pipelines for normal operation but can be isolated out by valve closure. It is intended that the system will operate with separate water supply zones (clusters of wells), to better control flows, for system resilience in isolating problems more rapidly and to allow pressure management in areas where pressure is high (generally central and to the east). An optimisation programme is underway and demand management measures will be increasingly important in the future.

There are few major water supply constraints to development of business land within the Christchurch area, as several major upgrades have either been undertaken in recent years or are planned to be undertaken within the next 10 years, i.e., are provided for in the current LTP.

However, as for sewerage, some greenfield business areas are not currently programmed to be serviced for water supply until sometime between now and 2048. Again, similar to sewerage infrastructure provision, development timing could be advanced if developers fund and construct new water supply mains not only within their landholdings but outside of the ODP areas to enable connection to Council services. In some of these areas' new wells and new network pump stations would also be required, to increase capacity.

A further area, the undeveloped parts of the Taits and east of Stanleys Road ODP area (IP and IG zones), would also require new wells and pump stations even though it is currently serviced for wastewater. This area is not included as being infrastructure constrained, as water supply in the NW is being assessed on an ongoing basis, and it is likely that Council would be responsible for these new wells and pump stations.

Stormwater
The Council's existing global consents for stormwater discharge set out what is to be achieved (standards for peak flows to control flooding, treatment to remove contaminants etc.), while Stormwater Management Plans set out how this will be done and by when. They are effectively a blueprint for how the water quality and quantity of urban development will be mitigated.
Where Council is mitigating new growth and allowing discharges, there is still a residual net increase in urban contaminants being discharged to receiving environments and therefore there is a requirement to balance this by retrofitting improved stormwater treatment for existing older development. Non-growth driven retrofit capacity or treatment must be funded by rates rather than DCs; therefore, improvement in water quality largely depends on how much Council can spend. As already noted, there are real financial constraints on Council at the present time.

For most sites in the northwest, west and southwest of Christchurch, stormwater capacity is not a significant constraint on new development, as these areas can provide their own stormwater detention and treatment and disposal on-site, or through a communal system nearby. This is because of the presence of subsurface gravel or coarse sand soils in these areas and means that almost all new development does not have to rely on a reticulated stormwater system outfalling to a stream or river.

On-site treatment and disposal of stormwater needs to be carefully managed however, because the west of the city sits above layers of unconfined aquifers, which are the source of the City's drinking water. Development is not precluded, but provision of land and facilities for stormwater treatment and disposal does increase the cost of development, meaning that stormwater facilities such as swales and infiltration basins are often incorporated in landscape areas or are located along roads.

Transport
The Christchurch urban area is serviced and connected by strategic transport links, including State Highways 1, 73, 74, 75 and 76, with these corridors controlled by NZTA (see "other infrastructure").

Council's Transport Strategic Plan 2012-2042 sets out a 30 year "vision" for transport within the city. This plan includes supporting the state highways with accompanying downstream enhancements to arterial connections and local roads, promoting modal choice through improved public transport, cycling and pedestrian networks, and a Travel Demand Management Programme. A draft Christchurch Transport Plan has been prepared and it is anticipated that consultation will occur on the draft in early 2023 subject to Council decision.

Additional growth is likely to lead to reductions in the level of service and capacity of some parts of the network, which will result in increasing delays and congestion on the network. This could have a constraining impact on economic growth, if not carefully managed.
While the Council's LTP sets out upgrades planned to Council's transport links within the next 10 years, it is difficult to directly link network constraints to developments in greenfield areas, as these normally simply add transport demand to particular routes and corridors.

There are infrastructure constraints indicated in Christchurch City where the District Plan requirements for roading improvements act as constraints on the timing of development. As for other Council infrastructure, developers are required to provide roading within new business subdivisions to Infrastructure Design Standards[67] and to vest these roads in Council.

A2.2 Selwyn District

A2.2.1 Availability of Development Infrastructure

Wastewater
The East Selwyn Sewer Scheme has capacity to support the development of the business environments in Rolleston, Lincoln, Prebbleton and West Melton, with additional upgrades planned and undertaken when population thresholds are met or where developers need to extend sewer mains and install lateral connections

[67] https://www.ccc.govt.nz/consents-and-licences/construction-requirements/infrastructure-design-standards/download-the-ids/

at the time of subdivision. Further, master planning and supporting Development Contribution policies are in place in the 2018-28 LTP.

Wastewater connections have yet to be installed to the boundaries of the proposed Neighbourhood Centres in the Falcon's Landing and Geddes/Dryden Trust Special Housing Area in Rolleston; the timing of which will be dependent upon the progressive development of the surrounding housing developments.

Although a connection is available to the trunk main to service the Lincoln Industrial Park, a wastewater main extension and pump station are required to be installed. These extensions and upgrades are likely to occur when the development of the adjoining housing areas is progressed.

Water Supply
Generally, bulk water infrastructure is planned and will be constructed in Rolleston, Lincoln, Prebbleton and West Melton as required, with developers needing to extend water mains and install lateral connections to the primary network at the time of subdivision. Further, master planning and supporting Development Contribution policies in place in the 2015-25 LTP. Some development areas in Lincoln, Rolleston, and Prebbleton require water supply and utility upgrades, which are programmed for upgrades by 2028. Developers have an option to progress these upgrades privately within a shorter timeframe in response to the timing and sequencing of development.

Water connections have yet to be installed to the boundaries of the proposed Neighbourhood Centres in the Falcon's Landing and Geddes/Dryden Trust Special Housing Area in Rolleston, the timing of which will be dependent upon the progressive development of the surrounding housing developments.

A water main is required to be extended to the Lincoln Industrial Park, the timing of which is dependent upon when the adjoining housing areas are developed.

Stormwater
Generally, stormwater capacity is available or possible for all sites that have been zoned for development, with an Integrated Stormwater Management System established in Lincoln to service the Rosemerryn Neighbourhood Centre.

The management of stormwater within the Lincoln Industrial Park may be able to be managed on-site, but it is likely that a combined scheme incorporating the adjoining undeveloped housing areas will need to be established to manage the wider site in an integrated way.

Transport
Urban areas have access to transport links, including the Main Trunk and Midland Lines and State Highway 1, 73 and 75. The Southern Motorway extension and Four-Laning State Highway 1 to Rolleston is under construction as a Road of National Significance. Future growth is enabled through progressive upgrades to transport links, which have been either undertaken or are programmed to ensure there is sufficient capacity within the strategic transport network to accommodate growth needs over time."

A2.3 Waimakariri District

A2.3.1 Availability of Development Infrastructure

Three waters infrastructure
Infrastructure services for stormwater, wastewater and potable water range from individual sewerage and water systems (such as in rural areas) to Council provided reticulated (piped) schemes. There has been a shift in recent years towards connecting-up small community schemes to larger reticulated schemes, and it is expected that this trend will continue. The Council has invested heavily in response to higher growth rates, including those driven by the 2010 and 2011 earthquake events. Two major infrastructure investment decisions are an example of this:

- The construction of the $36 million Eastern Districts Sewerage Scheme that connects and treats wastewater from nine eastern towns and communities (95% of properties in the district). The Eastern Districts Sewerage Scheme has capacity for projected growth until at least 2050. It also provides improved environmental benefits by replacing discharges to lowland rivers and streams or disposal onto land with an ocean outfall.
- A $16 million major upgrade of the Rangiora water supply in 2011 that includes a new deep artesian water source with multiple bores and in-ground infrastructure. With the completion of all planned bores in the borefield and additional reservoir storage, sufficient capacity has been provided for a doubling

in the size of Rangiora's population, thereby providing sufficient capacity to match the demand projected by the growth projections.

The Council's commitment over the past decade to major investment in infrastructure to cater for growth means that when considering development in the district over the next 30 years, the 'backbone' of the major infrastructure is already in place. The only work now required to meet growth demands is to integrate new development areas into the existing systems and respond to national policy requirements and meet the changing expectations of the community regarding the standard of services provided.

Transport
The main roading projects (outside of the State Highway network within the Waimakariri District) relate to connecting the eastern part of the District with Christchurch and making sure local arterial roads have sufficient capacity to cope with the anticipated growth in traffic volumes. This includes ensuring safety considerations are taken into account particularly on key routes and at intersections.

Work is programmed over the next two to three years to improve the arterial link from the west of Rangiora and Southbrook commercial area to the State Highway and Kaiapoi via Fernside and Flaxton Roads. As population grows so does the likelihood and number of crashes. Several safety projects have been planned, including the re-alignment of Skew Bridge, to allow for the increased volume and speed of traffic to and from the new arterial road at Silverstream.

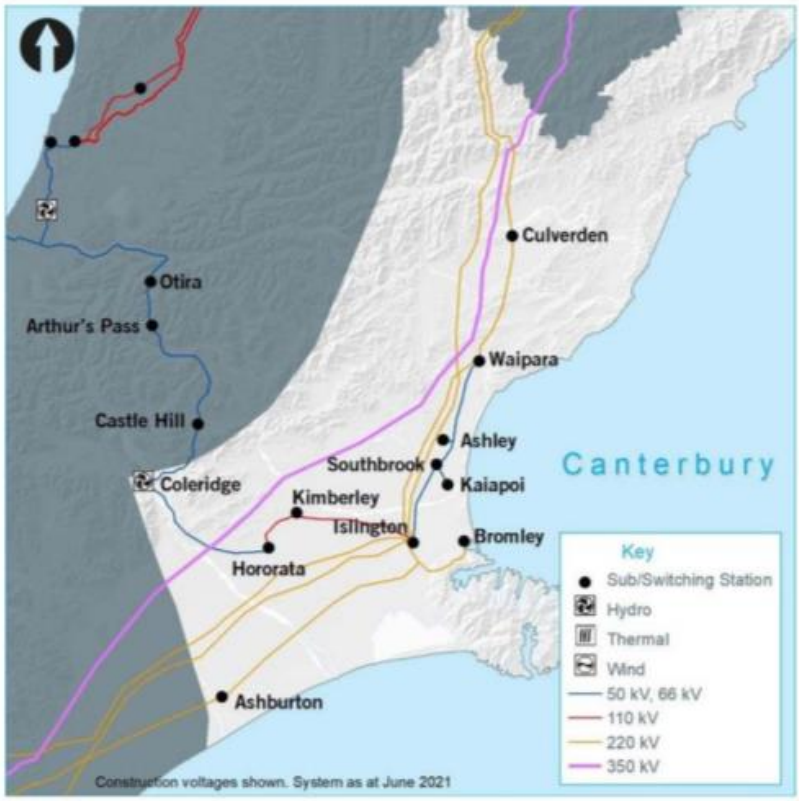
Other projects reflect the move towards providing alternatives to increased road construction and more cars. Council is already providing for an increased demand in cycle facilities and is looking longer term into Park 'n' Ride in Rangiora and Kaiapoi to encourage increased public transport uptake. Ongoing improvement to cycle lane facilities, such as the Belfast to Kaiapoi route will provide further opportunities for alternatives for commuters, particularly with the uptake of e-bikes.

Appendix 3 – Report on Availability of 'Additional Infrastructure'

A3.1 Electricity Transmission Infrastructure

Transpower is the State-owned enterprise that plans, builds, maintains, owns, and operates NZ's electricity transmission network known as the National Grid. Transpower transports bulk electricity from where it is generated by companies such as Meridian Energy and Genesis Energy, to the local lines distribution companies like Orion which supply the electricity to homes and businesses. It also connects several larger industrial companies directly (like the aluminium smelter at Tiwai) although there are no such connections within the Greater Christchurch area. The region's transmission network is illustrated below.

Figure 9: Canterbury Region Transmission Network



Source: Transpower Planning Report 2021

Transpower's Development Strategy "Transmission Tomorrow" (2018) describes key factors that it believes are driving significant change in the electricity sector. These are climate change; the possibility of increasing economic, political and security uncertainty; new technologies that are disrupting the energy industry; population growth and urbanisation; and New Zealand's unique combination of energy circumstances. These challenges lead to five strategic priorities: play an active role in enabling New Zealand's energy future; sustain our social licence to operate; match our infrastructure to need over time; evolve our services to meet customers' needs; and accelerate our organisational effectiveness[68].

[68] https://auc-word-edit.officeapps.live.com/we/wordeditorframe.aspx?ui=en%2DUS&rs=en%2DNZ&wopisrc=https%3A%2F%2Fenvironmentcanterbury.sharepoint.com%2Fsites%2FGreaterChristchurchSpatialPlan%2F_vti_bin%2Fwopi.ashx%2Ffiles%2Fdd370ec19863407ba467196955384d42&wdenableroaming=1&wdfr=1&mscc=1&hid=BAC86FA0-B0B4-1000-AFEB-0011DEEDC254&wdorigin=ItemsView&wdhostclicktime=1666084426455&jsapi=1&jsapiver=v1&newsession=1&corrid=c8b216c2-bbfa-4644-98f6-efc9dd100a7b&usid=c8b216c2-bbfa-4644-98f6-efc9dd100a7b&sftc=1&cac=1&mtf=1&sfp=1&instantedit=1&wopicomplete=1&wdredirectionreason=Unified_SingleFlush&rct=Medium&ctp=LeastProtected#_ftn1

Transpower regularly produces a Transmission Planning Report which sets out the grid asset capability and projects that it considers possible over the next 15 years. It forecasts annual peak demands at grid exit points (Bromley and Islington in Christchurch and Islington and Hororata for Selwyn) over this period. These forecasts are based largely on information provided by the distribution companies[69].

Transpower plans and funds for this forecast growth as it translates to the need for new and upgraded assets and renewals. At present, there are identified constraints with Christchurch's supply capacity from around 2025 and options to address these constraints are being investigated[70]. However, Transpower will continue to plan for and be responsive to forecast growth in accordance with this model over the next 30 years and as such, electricity transmission infrastructure is likely to be available to meet business growth needs over this period.

2. A3.2 Electricity distribution infrastructure

Orion New Zealand Limited is the electricity lines company that provides and manages the distribution network for Christchurch City and Selwyn Districts. MainPower NZ Limited services the Waimakariri District. In Christchurch, Orion takes power from Transpower grid exit points at Bromley and Islington, distributing electricity via predominantly 66kV and 33kV sub-transmission and 11kV distribution lines and cables to businesses and residential areas throughout the city. In Selwyn, Orion distributes power from the grid exit points at Islington, Kimberley, Hororata, Lake Coleridge, Castle Hill and Arthurs Pass around the district via the same means. In this regard it is important to note that currently the electricity supply in Selwyn is in large part met by grid exit points in Christchurch City. In Waimakariri, Mainpower takes power from Transpower grid exit points at Southbrook, Kaiapoi and Ashley and distributes the electricity via 66kV sub-transmission overhead lines and underground cables[71].

Over the next 10 years Orion is forecasting total capital expenditure of $946m on its distribution network across both Christchurch City and the Selwyn District to meet demand from major industrial customers and steady growth in certain residential areas, including enabling decarbonisation of process heat and transportation. This capital expenditure forecast also supports maintenance of safety levels and asset condition for existing asset fleets. Mainpower plans to spend $19M, in order to strengthen and expand its urban electricity network to connect customers[72]. Both companies have a 10-year plan where it identifies forecast growth areas based on data supplied by all three Councils including vacant land and take-up rates along with projected growth areas. This is monitored on an annual basis and the information shared with Transpower[73].

[69] https://auc-word-edit.officeapps.live.com/we/wordeditorframe.aspx?ui=en%2DUS&rs=en%2DNZ&wopisrc=https%3A%2F%2Fenvironmentcanterbury.sharepoint.com%2Fsites%2FGreaterChristchurchSpatialPlan%2F_vti_bin%2Fwopi.ashx%2Ffiles%2Fdd370ec19863407ba467196955384d42&wdenableroaming=1&wdfr=1&mscc=1&hid=BAC86FA0-B0B4-1000-AFEB-0011DEEDC254&wdorigin=ItemsView&wdhostclicktime=1666084426455&jsapi=1&jsapiver=v1&newsession=1&corrid=c8b216c2-bbfa-4644-98f6-efc9dd100a7b&usid=c8b216c2-bbfa-4644-98f6-efc9dd100a7b&sftc=1&cac=1&mtf=1&sfp=1&instantedit=1&wopicomplete=1&wdredirectionreason=Unified_SingleFlush&rct=Medium&ctp=LeastProtected#_ftn2

[70] https://auc-word-edit.officeapps.live.com/we/wordeditorframe.aspx?ui=en%2DUS&rs=en%2DNZ&wopisrc=https%3A%2F%2Fenvironmentcanterbury.sharepoint.com%2Fsites%2FGreaterChristchurchSpatialPlan%2F_vti_bin%2Fwopi.ashx%2Ffiles%2Fdd370ec19863407ba467196955384d42&wdenableroaming=1&wdfr=1&mscc=1&hid=BAC86FA0-B0B4-1000-AFEB-0011DEEDC254&wdorigin=ItemsView&wdhostclicktime=1666084426455&jsapi=1&jsapiver=v1&newsession=1&corrid=c8b216c2-bbfa-4644-98f6-efc9dd100a7b&usid=c8b216c2-bbfa-4644-98f6-efc9dd100a7b&sftc=1&cac=1&mtf=1&sfp=1&instantedit=1&wopicomplete=1&wdredirectionreason=Unified_SingleFlush&rct=Medium&ctp=LeastProtected#_ftn3

[71] https://auc-word-edit.officeapps.live.com/we/wordeditorframe.aspx?ui=en%2DUS&rs=en%2DNZ&wopisrc=https%3A%2F%2Fenvironmentcanterbury.sharepoint.com%2Fsites%2FGreaterChristchurchSpatialPlan%2F_vti_bin%2Fwopi.ashx%2Ffiles%2Fdd370ec19863407ba467196955384d42&wdenableroaming=1&wdfr=1&mscc=1&hid=BAC86FA0-B0B4-1000-AFEB-0011DEEDC254&wdorigin=ItemsView&wdhostclicktime=1666084426455&jsapi=1&jsapiver=v1&newsession=1&corrid=c8b216c2-bbfa-4644-98f6-efc9dd100a7b&usid=c8b216c2-bbfa-4644-98f6-efc9dd100a7b&sftc=1&cac=1&mtf=1&sfp=1&instantedit=1&wopicomplete=1&wdredirectionreason=Unified_SingleFlush&rct=Medium&ctp=LeastProtected#_ftn4

[72] https://auc-word-edit.officeapps.live.com/we/wordeditorframe.aspx?ui=en%2DUS&rs=en%2DNZ&wopisrc=https%3A%2F%2Fenvironmentcanterbury.sharepoint.com%2Fsites%2FGreaterChristchurchSpatialPlan%2F_vti_bin%2Fwopi.ashx%2Ffiles%2Fdd370ec19863407ba467196955384d42&wdenableroaming=1&wdfr=1&mscc=1&hid=BAC86FA0-B0B4-1000-AFEB-0011DEEDC254&wdorigin=ItemsView&wdhostclicktime=1666084426455&jsapi=1&jsapiver=v1&newsession=1&corrid=c8b216c2-bbfa-4644-98f6-efc9dd100a7b&usid=c8b216c2-bbfa-4644-98f6-efc9dd100a7b&sftc=1&cac=1&mtf=1&sfp=1&instantedit=1&wopicomplete=1&wdredirectionreason=Unified_SingleFlush&rct=Medium&ctp=LeastProtected#_ftn5

[73] https://auc-word-edit.officeapps.live.com/we/wordeditorframe.aspx?ui=en%2DUS&rs=en%2DNZ&wopisrc=https%3A%2F%2Fenvironmentcanterbury.sharepoint.com%2Fsites%2FGreaterChristchurchSpatialPlan%2F_vti_bin%2Fwopi.ashx%2Ffiles%2Fdd370ec19863407ba467196955384d42&wdenableroaming=1&wdfr=1&mscc=1&hid=BAC86FA0-B0B4-1000-AFEB-

This information is supplemented by additional specific information about development projects and plans. Proponents of new developments should work with Orion early in the development planning process to identify their projected electricity supply requirements. Where developers leave engagement with Orion to the resource consent stage of a development (or otherwise after plans are well advanced), this can create challenges to meeting the required electricity supply. Small-scale renewals and improvements are paid for by user charges. Significant new infrastructure is partially funded by new customers (or existing customers where it is their development that necessitates the significant new infrastructure).

Sometimes significant new developments come on-stream which necessitate bringing new and upgraded infrastructure investment forward to accommodate demand. An example of this is occurring in North Belfast at present with high electricity users, including Silver Ferns Farms decarbonising, or large redevelopments and upgrades to primary production facilities in the wider Burnham, Norwood and Dunsandel areas which are increasing demands on the distribution network in that area. Orion is currently in the final planning stages of a new Grid Exist Point and upgrading its network in these areas to meet this demand.

Whilst the existing network may have capacity constraints in various areas, Orion and Mainpower's planning and funding models means that electricity infrastructure is either presently available or likely to be available to meet future business demands.

However, the electricity sector is facing increasing uncertainty and a period of significant disruption and transformation. Rapid decarbonisation and increasing electrification present new and significant challenges for the industry - while novel and growing alternative generation resources (such as solar) and new technologies are likely to require modification and reconfiguration of existing electricity distribution and transmission network infrastructure. Orion is focused on meeting these challenges.

3. A3.3 Land Transport

The aspects of land transport which are defined as 'Additional Infrastructure' under the NPS-UD, are the parts of the Land Transport network which are not controlled by Councils (i.e., the Rail network which is controlled by KiwiRail and the State Highway network which is controlled by the New Zealand Transport Agency). The other aspects of land transport which are controlled by Councils (i.e., local roads, public transport, and most cycleways / footpaths) are considered 'Development Infrastructure'.

A3.3.1 Rail

It is estimated that around 20% of total freight volume moved through Greater Christchurch is by rail, significantly higher than the national average of 7%[74]. Much of this rail freight traffic carries dairy, coal, and timber products for export via the Port of Lyttelton. Consequently, much of this freight travels through Greater Christchurch from locations both within and outside the Canterbury region including Darfield, Clandeboye, the West Coast, Southland, and the North Island.

The rail lines in and out of Christchurch include:

- Auckland to Christchurch Line – containerised general freight movement predominantly north to south traversing the North Island Main Trunk, Cook Strait via Ferry and the Main North Line (Picton to Christchurch);
- Midland and West Coast Lines – linking Greymouth with Christchurch and the Port of Lyttelton. It is used mostly for transporting coal from the West Coast to Lyttelton for export.
- Main South Line - linking south to coastal towns and cities including Timaru, Oamaru, Dunedin (with an extension to Port Chalmers), Gore, Invercargill (with an extension to Ohai) and Bluff. It transports

0011DEEDC254&wdorigin=ItemsView&wdhostclicktime=1666084426455&jsapi=1&jsapiver=v1&newsession=1&corrid=c8b216c2-bbfa-4644-98f6-efc9dd100a7b&usid=c8b216c2-bbfa-4644-98f6-efc9dd100a7b&sftc=1&cac=1&mtf=1&sfp=1&instantedit=1&wopicomplete=1&wdredirectionreason=Unified_SingleFlush&rct=Medium&ctp=LeastProtected#_ftn6

[74] https://auc-word-edit.officeapps.live.com/we/wordeditorframe.aspx?ui=en%2DUS&rs=en%2DNZ&wopisrc=https%3A%2F%2Fenvironmentcanterbury.sharepoint.com%2Fsites%2FGreaterChristchurchSpatialPlan%2F_vti_bin%2Fwopi.ashx%2Ffiles%2Fdd370ec19863407ba467196955384d42&wdenableroaming=1&wdfr=1&mscc=1&hid=BAC86FA0-B0B4-1000-AFEB-0011DEEDC254&wdorigin=ItemsView&wdhostclicktime=1666084426455&jsapi=1&jsapiver=v1&newsession=1&corrid=c8b216c2-bbfa-4644-98f6-efc9dd100a7b&usid=c8b216c2-bbfa-4644-98f6-efc9dd100a7b&sftc=1&cac=1&mtf=1&sfp=1&instantedit=1&wopicomplete=1&wdredirectionreason=Unified_SingleFlush&rct=Medium&ctp=LeastProtected#_ftn7

general freight, empty containers from the Lyttelton Port Company's City Depot in Woolston returning south, milk products from Clandeboye and coal from Ohai to South Island industrial consumers. There is also a branch line from Hornby (the Hornby Industrial line, formerly the Southbridge Branch) that serve the Industrial areas of South Hornby.

In 2014, a study concluded that despite large volumes of export-related freight being moved by rail, there was still spare capacity on the rail network[75]. KiwiRail confirms that its infrastructure is sufficient to accommodate future growth and that being a service provider, they will respond as they can to meet clients' needs as they arise[76]. The company also states that it is unaware of any constraints that existing clients are experiencing in relation to rail.

Rail infrastructure is not considered to be an impediment to the development of business zones in Greater Christchurch because most businesses do not require or rely on rail transport and those that do, either locate in business zones with easy access to connect with the rail network (e.g., Middleton and Portlink Industrial areas) and/or provide their own rail infrastructure to suit their needs. For instance, Westland Milk's Rolleston plant in IZone, Rolleston I-Port, Metroport Christchurch and various lots within the Waterloo Business Park[77] provide rail sidings which enable packing and loading of containers onto rail for export through the Port of Lyttelton and/or the Port of Timaru. KiwiRail operates a freight interchange yard at Middleton which is used to stage freight from the north carrying domestic freight for local and regional distribution and export product to Lyttelton (by road)[78]. Access to rail infrastructure is not generally needed for industrial zoned land in Waimakariri as these zones mostly serve a localised need.

The capacity assessment identifies that there is a significant amount of industrial land supply available in locations which have rail freight access including at Rolleston, Waterloo Business Park, Middleton, and Belfast. However, if there was significant growth in rail use, there are some parts of the network where there are capacity constraints. The Main North Line is mostly a single track and there is no longer a direct connection between the Main North line and the Main South Line to Lyttelton. There is also a single track between Rolleston and Islington on the Main South Line, and through the Lyttelton tunnel.

In the event that demand for rail access from industrial zones grows, there may be scope to consider additional opportunities to provide new railway infrastructure to link with the existing rail network in the north and south of the city in particular. Alternatively greater use of the container interchange facility at Middleton could be used, albeit with identified implications on level crossings in the vicinity of the Yard. Middleton Yard also has capacity constraints under its current configuration but has additional land available for expansion to meet the

[75] https://auc-word-edit.officeapps.live.com/we/wordeditorframe.aspx?ui=en%2DUS&rs=en%2DNZ&wopisrc=https%3A%2F%2Fenvironmentcanterbury.sharepoint.com%2Fsites%2FGreaterChristchurchSpatialPlan%2F_vti_bin%2Fwopi.ashx%2Ffiles%2Fdd370ec19863407ba467196955384d42&wdenableroaming=1&wdfr=1&mscc=1&hid=BAC86FA0-B0B4-1000-AFEB-0011DEEDC254&wdorigin=ItemsView&wdhostclicktime=1666084426455&jsapi=1&jsapiver=v1&newsession=1&corrid=c8b216c2-bbfa-4644-98f6-efc9dd100a7b&usid=c8b216c2-bbfa-4644-98f6-efc9dd100a7b&sftc=1&cac=1&mtf=1&sfp=1&instantedit=1&wopicomplete=1&wdredirectionreason=Unified_SingleFlush&rct=Medium&ctp=LeastProtected#_ftn8

[76] https://auc-word-edit.officeapps.live.com/we/wordeditorframe.aspx?ui=en%2DUS&rs=en%2DNZ&wopisrc=https%3A%2F%2Fenvironmentcanterbury.sharepoint.com%2Fsites%2FGreaterChristchurchSpatialPlan%2F_vti_bin%2Fwopi.ashx%2Ffiles%2Fdd370ec19863407ba467196955384d42&wdenableroaming=1&wdfr=1&mscc=1&hid=BAC86FA0-B0B4-1000-AFEB-0011DEEDC254&wdorigin=ItemsView&wdhostclicktime=1666084426455&jsapi=1&jsapiver=v1&newsession=1&corrid=c8b216c2-bbfa-4644-98f6-efc9dd100a7b&usid=c8b216c2-bbfa-4644-98f6-efc9dd100a7b&sftc=1&cac=1&mtf=1&sfp=1&instantedit=1&wopicomplete=1&wdredirectionreason=Unified_SingleFlush&rct=Medium&ctp=LeastProtected#_ftn9

[77] https://auc-word-edit.officeapps.live.com/we/wordeditorframe.aspx?ui=en%2DUS&rs=en%2DNZ&wopisrc=https%3A%2F%2Fenvironmentcanterbury.sharepoint.com%2Fsites%2FGreaterChristchurchSpatialPlan%2F_vti_bin%2Fwopi.ashx%2Ffiles%2Fdd370ec19863407ba467196955384d42&wdenableroaming=1&wdfr=1&mscc=1&hid=BAC86FA0-B0B4-1000-AFEB-0011DEEDC254&wdorigin=ItemsView&wdhostclicktime=1666084426455&jsapi=1&jsapiver=v1&newsession=1&corrid=c8b216c2-bbfa-4644-98f6-efc9dd100a7b&usid=c8b216c2-bbfa-4644-98f6-efc9dd100a7b&sftc=1&cac=1&mtf=1&sfp=1&instantedit=1&wopicomplete=1&wdredirectionreason=Unified_SingleFlush&rct=Medium&ctp=LeastProtected#_ftn10

[78] https://auc-word-edit.officeapps.live.com/we/wordeditorframe.aspx?ui=en%2DUS&rs=en%2DNZ&wopisrc=https%3A%2F%2Fenvironmentcanterbury.sharepoint.com%2Fsites%2FGreaterChristchurchSpatialPlan%2F_vti_bin%2Fwopi.ashx%2Ffiles%2Fdd370ec19863407ba467196955384d42&wdenableroaming=1&wdfr=1&mscc=1&hid=BAC86FA0-B0B4-1000-AFEB-0011DEEDC254&wdorigin=ItemsView&wdhostclicktime=1666084426455&jsapi=1&jsapiver=v1&newsession=1&corrid=c8b216c2-bbfa-4644-98f6-efc9dd100a7b&usid=c8b216c2-bbfa-4644-98f6-efc9dd100a7b&sftc=1&cac=1&mtf=1&sfp=1&instantedit=1&wopicomplete=1&wdredirectionreason=Unified_SingleFlush&rct=Medium&ctp=LeastProtected#_ftn11

growth needs for freight volumes[79]. In conclusion, it is considered that access to rail infrastructure is, or is likely to be available, to support business development that is presently enabled in existing plans in Greater Christchurch.

A3.4 Land Transport – State Highway Network

The State Highway Network contributes to city-wide, inter-regional and international transportation of freight, and facilitates the movement of the Greater Christchurch population and visitors. The Network supports Christchurch as the main freight distribution hub for Canterbury and the South Island, linking production to markets in the city and elsewhere through the South Island's only deep-water port at Lyttelton and Christchurch Airport (the South Island's only international airport offering long haul services). A highly efficient, safe, and sustainable transport network is therefore vital to support businesses and the City's economic growth.

Rapid growth in and around Christchurch in recent years, particularly in the Selwyn and Waimakariri Districts, has placed demands on the State Highway network to the north and south of the city and around its western edge, reducing the efficiency of access to the City Centre, the Christchurch International Airport (SH1) and Port of Lyttelton (SH74 and SH73). T

In general, it can be said that the majority of industrial zoned land in Greater Christchurch has access to the state highway network. However, growth is likely to lead to reductions in the level of service and capacity of some parts of the network, which will result in increasing delays and congestion on the network, which could have a constraining impact on economic growth, if it is not carefully managed[80].

The largest areas of industrial zoned land have access to both the state highway and rail network, with considerable enhancements recently achieved, currently underway or programmed for the coming few years. Given the importance of Christchurch as a centre for the distribution of local and regional commodities, and the size of the local market, a number of distribution centres and freight forwarders are located along the Main South Line corridor between Hornby and Middleton. Other areas including Rolleston and Islington (Waterloo Business Park) benefit from both good road and rail connections, whilst the airport provides predominantly for logistics and freight handling of goods transported by air. The smaller industrial areas including at Kaiapoi and Rangiora and in and around the eastern suburbs of Christchurch City (not including Woolston), also have access to the state highway and/or rail network.

The main issue with regards to the state highway network relates to levels of service. Brougham Street is already heavily constrained, particularly during peak periods, affecting levels of service on this route for all road users including freight. This could have a constraining impact on economic growth if it is not carefully managed. The Transport Agency is working closely with the City Council on this issue. The impact of growth on this issue will be considered further through the Future Development Strategy.

4. A3.5 Telecommunications

All of Christchurch is covered by wi-fi with some very minor exceptions in the Port Hills. A combination of Cable internet, ADSL and VDSL cover Greater Christchurch comprehensively. Greater Christchurch also has access to fibre connection. Internet access and coverage is therefore widely accessible although potentially at different levels of upload/download quality.

[79] https://auc-word-edit.officeapps.live.com/we/wordeditorframe.aspx?ui=en%2DUS&rs=en%2DNZ&wopisrc=https%3A%2F%2Fenvironmentcanterbury.sharepoint.com%2Fsites%2FGreaterChristchurchSpatialPlan%2F_vti_bin%2Fwopi.ashx%2Ffiles%2Fdd370ec19863407ba467196955384d42&wdenableroaming=1&wdfr=1&mscc=1&hid=BAC86FA0-B0B4-1000-AFEB-0011DEEDC254&wdorigin=ItemsView&wdhostclicktime=1666084426455&jsapi=1&jsapiver=v1&newsession=1&corrid=c8b216c2-bbfa-4644-98f6-efc9dd100a7b&usid=c8b216c2-bbfa-4644-98f6-efc9dd100a7b&sftc=1&cac=1&mtf=1&sfp=1&instantedit=1&wopicomplete=1&wdredirectionreason=Unified_SingleFlush&rct=Medium&ctp=LeastProtected#_ftn12

[80] https://auc-word-edit.officeapps.live.com/we/wordeditorframe.aspx?ui=en%2DUS&rs=en%2DNZ&wopisrc=https%3A%2F%2Fenvironmentcanterbury.sharepoint.com%2Fsites%2FGreaterChristchurchSpatialPlan%2F_vti_bin%2Fwopi.ashx%2Ffiles%2Fdd370ec19863407ba467196955384d42&wdenableroaming=1&wdfr=1&mscc=1&hid=BAC86FA0-B0B4-1000-AFEB-0011DEEDC254&wdorigin=ItemsView&wdhostclicktime=1666084426455&jsapi=1&jsapiver=v1&newsession=1&corrid=c8b216c2-bbfa-4644-98f6-efc9dd100a7b&usid=c8b216c2-bbfa-4644-98f6-efc9dd100a7b&sftc=1&cac=1&mtf=1&sfp=1&instantedit=1&wopicomplete=1&wdredirectionreason=Unified_SingleFlush&rct=Medium&ctp=LeastProtected#_ftn13

Mobile network coverage is available across Greater Christchurch[81]. Providers Vodafone, Spark and 2degrees own shares across the different bandwidths of 2G, 3G, 4G and 4G+ to collectively provide coverage to Greater Christchurch at varying coverage reliability.

[81] https://auc-word-edit.officeapps.live.com/we/wordeditorframe.aspx?ui=en%2DUS&rs=en%2DNZ&wopisrc=https%3A%2F%2Fenvironmentcanterbury.sharepoint.com%2Fsites%2FGreaterChristchurchSpatialPlan%2F_vti_bin%2Fwopi.ashx%2Ffiles%2Fdd370ec19863407ba467196955384d42&wdenableroaming=1&wdfr=1&mscc=1&hid=BAC86FA0-B0B4-1000-AFEB-0011DEEDC254&wdorigin=ItemsView&wdhostclicktime=1666084426455&jsapi=1&jsapiver=v1&newsession=1&corrid=c8b216c2-bbfa-4644-98f6-efc9dd100a7b&usid=c8b216c2-bbfa-4644-98f6-efc9dd100a7b&sftc=1&cac=1&mtf=1&sfp=1&instantedit=1&wopicomplete=1&wdredirectionreason=Unified_SingleFlush&rct=Medium&ctp=LeastProtected#_ftn14

Appendix 4 - Methodology

A4.1 Introduction

This section summarises the methodology for this BCA, which brings together the demand and supply results for business land by Territorial Authority to present an overview of the sufficiency of business land at a Greater Christchurch level. In effect, a bottom-up approach has been applied of collating results at a TA level.

Existing information and models have been relied on to the extent possible and in some cases, the recommended approach in the guide has not been followed due to the timeframes and resources available. Notwithstanding this, the BCA gives effect to the evidence and monitoring requirements of the NPS-UD.

A4.2 Population and Household Projections

A4.2.1 Introduction

To achieve the BCA requirements, having robust population and household projections is key to addressing the level of demand and subsequent supply required in both housing and business markets in the Greater Christchurch area. The projection methodology is outlined in the GCP Housing Capacity Assessment 2021. This is summarised here.

A4.2.2 Statistics New Zealand Projections

The initial step was to identify demand projection ranges. These were the three Stats NZ projections of low, medium, and high. Each projection varies some the following assumptions: future fertility (births), mortality (deaths), and migration. Stats NZ first does this as a national projection and then uses this as a constraint for the subnational assumptions (this 'top-down' approach prevents implausible projections for any area). The projections produced by Statistics New Zealand are not to be considered as predictions, but an indication of likely future population change given specific assumptions listed above.

By comparing recent growth trends (Net New Building Consent Data), the most appropriate projection was chosen. Selwyn and Waimakariri is High, and Christchurch is Medium. Once the projection was chosen, they were adjusted to the most recent Stats NZ Estimate. The Estimate gives a population at a particular time, the Estimate used was June 2020. This sets the starting point, and the projection defines the growth per year.

Population Projections

Table 38: TA Population Projections

	2020	2021	2024	2031	2051	Total
Waimakariri	64,700					
Christchurch	394,700					
Selwyn	69,700					
Total	**529,100**	**536,880**	**558,540**	**600,580**	**705,600**	**+168,720**

Source: Statistics New Zealand, GCP

Households Projections

The projected number of households was determined using the population projections and average household sizes. This work was done by Livingstone and Associates and is shown below.

Table 39: TA Household Projections

Housing Demand by Typology	Short Term		Medium Term		Long Term	
	Standalone	Multi-unit	Standalone	Multi-unit	Standalone	Multi-unit
Waimakariri	1,307	221	3,730	778	9,313	1,847
Christchurch	3,691	1,619	10,556	4,624	24,414	10,780

Selwyn	2,177	85	6,805	313	20,617	1,107
Total	**7,175**	**1,925**	**21,091**	**5,715**	**54,344**	**13,734**

Source: Livingstone and Associates GCP Report

A4.3 Business Demand

A4.3.1 Projections

Business demand is generated by several factors and each TA has a model that projects employment, floorspace and land demand. For Selwyn and Waimakariri, the population projections are a key factor in determining employment growth. For Christchurch, agglomeration and ancillary employment are more important than population growth. The difference in approach reflects the difference in the type and scale of the employment centres across Greater Christchurch and is therefore complementary.

A4.3.2 Christchurch City

The modelling for demand is based on a VAR model, whereby employment growth drives population growth and employment growth is modelled based on past trends across a number of years (in this case, 20 years) as opposed to a single point in time.
Employment data is sourced from Statistics New Zealand (Stats NZ), Business Demography database and spanning from 2000 to 2020.

The employment data of twenty-two (22) industries within the economy are aggregated into six sectors that represent the main users of the land, the VAR model capturing the relationship between industries within the economy over time.

The model assumes that the level of employment in the current period affects the next period's employment level. This is evident in the historical employment values within most economies, as next year's level of employment adjusts to what it was in this year.

A4.3.3 Selwyn and Waimakariri Districts

The methodology for Selwyn and Waimakariri Districts is the same and therefore summarised together. The model uses base employment data by ANZSIC 2nd level categories and projects employment growth based on several factors to determine demand for commercial zones and industrial zones.

Key assumptions and inputs to determine the employment growth are household growth, investment demand, and export demand. These, along with the inter-relationship supply, increasing self-sufficiency, and ancillary growth produces the projections. This is aggregated into commercial and industrial employment demand for the district.

Projections of growth are then converted to a floorspace. This is based on current ratios of employment to floorspace. Generally, these are around 40m2 for commercial and 169m2 for industrial for Selwyn and around 40m2 for commercial and 100m2 for industrial for Waimakariri. The floorspace data used was based on the Rateable Property database of SDC and WDC, LINZ building footprint data. It includes all floorspace, some of which may not be utilised e.g., vacant space, or that is used for other activities. The employee to floorspace ratios may therefore be conservative i.e., higher than is likely to be the case in respect of occupied space.

The final step in the model is to covert the demand for floorspace into demand for land. The Floor Area Ratios (FAR) of existing development have been assessed to establish an understanding of the intensity of floorspace to land that is achieved in each zone. The resulting FAR is used to covert the demand for floorspace into demand for land. Generally, these are around 0.45 for commercial and 0.47 for industrial for Selwyn and around 0.75 for commercial and 0.49 for industrial for Waimakariri.

The future demand located in each zone reflects the types of activities that currently locate in the zone. For example, there is currently a proportion of the retail and office sectors that locate in industrial zones, and it is assumed that this continues. This approach is considered appropriate in the context of Selwyn and Waimakariri District, having regard to the current District plan rules, in assuming that a similar level of economic activity will

occur in the same zones as present. The distribution of commercial activity may change in the future because of changes associated with District Plan reviews.

A4.3.4 Evaluation of the methodologies

GCP has utilised existing information and consultants as much as possible. This meant that understanding and agreeing each other's methodologies including synergies and potential inconsistences, was extremely important. While preparing the BCA, key elements of the methodologies of each of the Councils were identified, including differences. Through discussion amongst the staff from each of the TAs alongside the modellers' expertise, these differences were reconciled to reach consensus on an agreed approach or differences were agreed as appropriate and documented. This is outlined in Appendix 6.

A4.4 Business Capacity

Business capacity refers to the total vacant and vacant potential land is available in business-zoned land.

A4.4.1 Christchurch

For Christchurch City, plan-enabled capacity for all business activity draws on the Council's existing Vacant Land Register (VLR), which includes information on the approximate quantum and size of vacant parcels in both industrial and commercial zones (both partial and whole sites), zoning, location, and other attributes of each parcel.

This information has been collected over a number of years and is based primarily on changes in the built form, identified through building consent data for construction and demolitions, and reviewed, where necessary, against aerial/ satellite photography. GIS layers are used to ensure parcel and zoning information is accurate. Some ground-truthing of the VLR was also undertaken, which has led to the removal and addition of the areas identified in Table 40. The basis for the largest areas being removed, particularly in the North Quadrant of the City, was land was in the VLR that was in fact occupied by activities without a building e.g., car rental businesses.

Table 40: Land removed and added from the VLR

Land to be removed (ha)	Commercial	Industrial	Notes
Central Quadrant	12.1	1.78	Removal of land subject to designation for central city anchor projects (Stadium and Metro Sports Facility)
East Quadrant	0.29	5.76	
North Quadrant	0.49	50.22	Mostly airport land that was showing on the VLR but is actually occupied by activities without buildings e.g., car hire
South Quadrant	3.58	19.90	
Land to be added	Commercial	Industrial	
Central quadrant	0.56	-	
Eastern quadrant	2.84	-	

In addition, the following sources have been utilised in determining the supply of land and floorspace:

- Land use surveys of all commercial centres
  Surveys were carried out to quantify the actual retail floorspace and out of zone commercial activity. This identified the amount of existing occupied retail floorspace both in zone and out of zone, as well as quantifying vacant sites and floorspace. In doing so, the quantum of floorspace utilised for non-commercial activity could be determined which has been excluded from the assessment to avoid over-estimating the potential capacity.
- Vacant office floorspace in the Central City
  A number of developments in the Central City have relied on insurance proceeds and not the typical lending constraints, proceeding without tenants secured for their premises. This has contributed to the development of space, which there has not been demand for, contributing to an over- supply of office floorspace. Therefore, for the purpose of this assessment, account has been had of the vacant

office floorspace available (in excess of the 8% vacancy rates deemed necessary for an efficiently operating market) in determining short-term supply. This data was sourced from Colliers International, dated October 2017.

- Redevelopment potential based on resource consents
  For Christchurch City, the focus of its assessment of plan-enabled supply was vacant land rather than redevelopment potential. However, some account was taken of known pipeline or likely redevelopment proposals, primarily within or immediately adjoining commercial centres. This included capacity that may be enabled by the following:

Table 41: Summary of potential redevelopment opportunities

	Site	Size	Activity type	Status	Quadrant	
1	Northlands Mall	2,024GLFA (3,010sqm GFA)	Food precinct addition with covered 'winter garden' and outdoor seating. Two new retail tenancies and centre entrance fronting Main North Road. Net loss of 104 parking spaces and landscaping.	Completed	North	RMA/2016/2020 (expires 14/09/21)
2	Hornby Mall	3,000sqm GLFA	Additional capacity enabled by consent that hasn't yet been implemented.	Not commenced but recent application to extend the lapse period for consent. This floorspace is the balance of a previously implemented consent.	South	RMA92021123 and RMA/2017/2678 (expires 01/11/22)
3	Riccarton Mall	8,000sqm GLFA	Additional retail, car parking, outdoor hospitality	Not commenced.	South	RMA92021562 (expires 31/07/2019)
4	Riccarton Mall	Land Area: 2,703sqm site	No known development plans but has been purchased from CCC by Scentre/Westfield Mall. Existing buildings (Council community centre) to be demolished and rebuilt on adjacent land (complete end 2018)	No commenced and no resource or building consents have been lodged	South	n/a (Commercial Core Zone - may not require RC).
5	Palms Mall	9,329sqm GLFA	Additional retail floorspace, mall and service space located at ground level adjacent to Marshland Road. Extension to existing car parking on level 2 and creation of 2 new car parking levels (3&4)	Not commenced.	East	RMA92015315 Expires 22/04/2020
6	Land adjoining the Palms Mall	Land area: 21,029sqm	Mall owner AMP has purchased a large number of residential properties surrounding the Mall and has	Not commenced and no resource or building consents have	East	n/a

			obtained a change of zoning from residential to commercial core for this land. Therefore, the District Plan is enabling of redevelopment of this land. NB that AMP also owns other land adjoining the Mall which is still in residential zoning (13,468sqm).	been lodged to date.		
7	Eastgate Mall	Current resource consents for redevelopment of some of car parking area however this is already taken into account via the vacant land supply assessment so no need to consider again				
8	Church Corner	1,674sqm GLFA (net increase)	Redevelopment to provide new Liquor King, Briscoes and Farmers Market. Increasing GLFA from 19007sqm to 20681sqm and a loss of 82 car parks.	Completed		RMA/2017/2306 (Expires 01/12/22)

Aside from the extant resource consents referred to above, the redevelopment potential of existing developed sites has not been incorporated in the assessment. The estimates of supply are therefore conservative and any potential shortfall in supply could potentially be addressed through redevelopment opportunities elsewhere.

Also not accounted for is vacant floorspace for industrial activities. Data has been supplied by JLL but there are limitations with the datasets such that it cannot be relied on, namely that the dataset is not complete i.e., it does not capture all vacant floorspace.

In the assessment of vacant land and the potential floorspace on any given site, assumptions have been made, which are summarised below.

Building height in the Central City
An initial estimate of 2.06 stories was assumed, based on the average height of buildings in Christchurch's CBD prior to the earthquakes of 2010/2011. This is relatively consistent with and in some cases, higher than the average assumed in other centres including Auckland (1.8) and Hamilton (1.6). Wellington has a higher average of 2.4, which may reflect the limited area available for growth of the CBD.

Sensitivity testing has been undertaken with a revised assumption of 3.3 stories being used on the basis that building heights were likely to increase over time. This was informed by the following:

1. Research by Colliers and Beca in 2011 indicated that buildings above 12 floors were not likely to be economically viable, and the residual land value declined sharply as building heights increased above 6 stories. This suggests buildings of a lesser height (3 – 4 stories) are more viable[82].
2. A vision of the CCRP is a more compact central city, which implies a greater level of efficiency in the use of land i.e., utilisation of vertical space. Given the inefficient use of land in the Central City prior to the earthquake, a higher average in the height of buildings has been assumed.
3. Landowners who have been paid out by their insurance company may have more equity to build higher without the necessity of tenant guarantees.

As recommended in section 1.4 of part 3 to the guide, ground-truthing has been undertaken to understand the height of buildings developed in the Central City. The results of this analysis have enabled an understanding

[82] Appendix G – Technical Appendix to the Draft Central City Plan – Financial Feasibility of Building Development in the Christchurch CBD (Colliers International and BECA) (14 November 2011)

of the average building heights by zone and EFM area as presented in the table below. These two EFM areas comprise the whole of the Central Quadrant.

Table 42: Average building heights by zone and EFM area

	EFM Area 1 (Inner city)	EFM Area 2 (Inner City Edge)
Commercial Central City Business	4.23	-
Commercial Central City Mixed Use	1.81	-
Commercial Central City (South Frame)	2.4	-
Industrial General	-	1.1
Commercial Office	-	2.25
Commercial Core	-	1.3
Commercial Retail Park	-	1.55
Total by EFM Area	2.7	1.2
Grand Total	2.14	

This ground-truthing exercise confirmed that the original assumed average height in those areas (2.06 storeys) was consistent with historical built form but that a higher average building height (3.3) was appropriate to adopt for the reasons set out in (1)-(3) above. Recent building activity, particularly in the Central City Business Zone, indicates that new building activity in this central quadrant is likely to be at levels higher than the historical heights.

Reconciliation of land/ floorspace utilised for non-business activities

Part 4 of the guide requires consideration of the interactions between housing and business, including the need to consider how capacity may be utilised for non-business activities, to avoid under-estimating, over-estimating, and double-counting supply. Section 2.1 suggests that Councils undertake "a review of district plan activity tables to identify the types of activities that are enabled in different zones. However, it is also useful to 'ground-truth' these cases by analysing current land uses within zones that enable multiple types of use or discussing with stakeholders".

The following describes assessments made of non-business activities in commercial zones.

Residential Activity in Business Zones

No reconciliation was considered necessary for the majority of business zones on the basis that district plan provisions do not enable residential activity to locate at ground floor (other than to the rear of commercial activities) and because there was little evidence of any ground floor residential activity occurring on business zoned land. Indeed, there is very little evidence of residential activity occurring above ground floor in business zones either, other than to a limited extent in the central city[83].

The exception to this is the Commercial Central City Mixed Use Zone which permits residential activity at ground floor, thus having the potential to compete with other activities for use of this land. A land use survey was undertaken by CCC in November 2017 to inform the extent to which land for various land uses within the CCCMU Zone is split between the Housing and Business Development Capacity Assessments. However, it was difficult to find an area of the zone which was likely to be representative of the future proportional split of activities. This is because:

- The central city has sustained such considerable damage to land and buildings including significant building demolitions, that makes identifying the recent / current land use composition difficult; and

The Christchurch Central Recovery Plan (and its incorporation into the Christchurch District Plan) resulted in a new planning framework for the central city, including this zone. This means that the historical composition of activities in this zone is unlikely to continue into the future and should not be used as a basis for future projections. This part of the city was previously an inner-city industrial zone characterised by light industry, warehousing and service industries including a range of long-established industries often on small sites. The new planning framework still enables these activities but now promotes redevelopment as a vibrant urban area

[83] See also the section 2.1 of the HLCA which assumes that no residential activity will occur in commercial zones outside the central city. It also considers there to be no capacity in the CCCB and CCCMU Zones above ground floor level because there is no evidence to inform the potential capacity at this stage.

where a diverse and compatible mix of activities can co-exist, including commercial and residential activities. It is anticipated that this zone will typically be redeveloped for these higher value uses.

Notwithstanding these limitations, a survey area[84] was selected that is undergoing redevelopment of the kind anticipated by the new zone provisions. That survey identified the following proportional split of activities at ground floor level.

Table 43: Proportional split of activities at ground floor level in survey area

Activity	Land area	%
Retail	34,685	38
Residential	9,217	10
Office	11,738	13
Industrial	7,695	9
Vacant/Carpark	20,884	23
Other	6,272	7
TOTAL	90,491	100

However, it should be noted that the survey area comprises a very large residential development site85 which the project team considered unlikely to be replicated throughout the CCCMU Zone over the next 30 years. For the purposes of this capacity assessment, it was assumed that 5% of the CCCMU (rather than 10%) will not be available for business activities at ground floor level.

Retirement Villages in Business Zones
Retirement Villages are a form of residential activity that is permitted at ground floor level in some commercial zones and in theory could compete with commercial activities for land. However, analysis of previous consents (past 10 years) shows that almost all retirement villages have located within residential zones; therefore, for the purposes of this assessment, it has been assumed that no business land will be taken up for this use.

Visitor Accommodation in Business Zones
No reconciliation was made for visitor accommodation on the basis that in commercial centres, visitor accommodation is required to be located at upper floors, thus not competing for ground floor space/land. In the context of business land, this is most likely to be hotels locating within the central city. Other forms of visitor accommodation tend to locate outside of centres, mostly in residential zones within an Accommodation and Community Facilities overlay. The HLCA has made allowance for this within that assessment.

Anchor Project designations
The most significant reconciliation exercise forming part of this assessment for Christchurch City relates to land which is commercially zoned but designated for other (non-business) purposes. This includes:

Table 44: Reconciliation of Anchor Project designations

Designation	Underlying Zoning	Size	Activity/Purpose
North and East Frames (designation reference V4) Requiring Authority: Ōtākaro Limited	Commercial Central City Business Zone and Commercial Central City Mixed Use Zones	9.1ha (6.8ha vacant)	Designation for housing by Ōtākaro Limited. Master Plan proposed 900 houses and approx. 1,000sqm commercial floorspace. Under construction.
Metro Sports Facility (V7) Requiring Authority: Ōtākaro Limited	Commercial Central City Mixed Use Zone	7.2 ha (5.8 ha vacant)	Sports facility and ancillary activities.

[84] The survey area was bound by St Asaph Street in the north, Madras Street in the east, Dundas Street and Eaton Place in the south and Colombo Street in the west.
[85] Atlas Quarter, Government-led development projecting comprise of 106 townhouses and apartments. https://www.stuff.co.nz/the-press/news/97271353/Crown-led-housing-project-triggers-transformation-of-Christchurchs-Welles-St

Stadium including Spectator Events Facility (H4) Requiring Authority: Minister Supporting Greater Christchurch Regeneration	Commercial Central City Mixed Use Zone	6.9 ha (4.7 ha vacant)	Stadium including Spectator Events Facility and ancillary activities

This land was removed from the BCA. The Housing Assessment includes the North and East Frame land as plan enabled housing supply (900 houses).

Business activities in non-business zones
This BCA assumes that future business activities will locate within business zones. This assumption is made on the basis that there is no reliable data upon which to inform any assumption about the likely future extent of out-of-zone business activity. Whilst historical data shows that a significant amount of all commercial activity has occurred outside of commercial zones since 200086, the new District Plan has a centres-based commercial strategy, directing new commercial activities to centres such that it is anticipated that out of zone activity will be much more limited.

Allowance has however been made to recognise the extent of business activities that were displaced by the earthquakes and that currently operate 'out of zone' under special regulatory dispensation87. As discussed, earlier these activities will require space within business zones when their temporary accommodation permits expire in June 2021.

A4.4.2 Selwyn and Waimakariri Districts

The methodology for Selwyn and Waimakariri Districts is the same and therefore summarised together. The task of determining capacity forms part of the Capacity for Growth Models. This involves the following steps.

Establishing the amount of zoned land for business
The first task was to define land that was capable of development. This involved the exclusion of some areas e.g., roads and railways, designations. Other restrictions on land, for example covenants, were not excluded due to the lack of data to make an informed decision. The exercise of determining the quantum of zoned land required a review of parcel boundaries relative to zone boundaries, which did not match in some instances. A process was therefore carried out to allocate a proportion of each parcel split by a zone boundary to a business zone.

Identification of current development
As a second step, the amount of land that is already utilised was determined, having regard to the amount and location of existing development[88]. In commercial zones, the quantum of floorspace on each site was estimated using the building floor area and a street view survey of the height of buildings (in stories).

Contemporary development potential
Building on the preceding steps, an assessment was made to determine the 'contemporary development potential' that the market could be expected to deliver. This draws on data on existing development to provide outputs of what is "achievable". This highlights the level of development that has been achieved by the market which can be thought of as 'currently suitable'.

Data on existing development was used to determine the floor area ratio (FAR) of every parcel[89]. Analysis was then undertaken to establish the FAR at the 80th percentile for each zone, i.e., only 20% of the existing built form in each zone is more intensive. The FAR at the 80th percentile is considered to represent an achievable level of development. With development exceeding this level, it is considered reasonable to assume that other parcels in the zone could be developed to this level.

[86] Property Economics Report (2017), Christchurch Business Land Capacity Assessment, page 41.
[87] Canterbury Earthquake (RMA Permitted Activities) Order 2011
[88] The source of data on the amount and location of existing development included Rateable property and the LINZ building outline.
[89] The existing floorspace on each parcel was estimated using the building floor area for each Rateable Property and building coverage for each Building Outline.

The 80th percentile was then applied to existing sites to determine their redevelopment potential and the 'contemporary development potential'.

It is important to note that the contemporary development capacity is significantly smaller than the plan enabled capacity. The estimate of development capacity based on existing intensities of development may in itself be overly conservative and unlikely to eventuate but provides a relevant base line for understanding the least amount of potential development that could be suitable in Selwyn and Waimakariri. Generally, in high growth economies, the intensity of development tends to increase with time. This means that the contemporary development potential is likely to underestimate the development level that is achieved in the future.

A4.5 Development Infrastructure

The assessment of 'Development Infrastructure' involved an evaluation of the plan enabled capacity to determine what area was serviced. In circumstances where it was not, an assessment was made to determine whether infrastructure was identified in a Long Term Plan and Infrastructure Strategy consistent with the NPS-UD. This involved dialogue with asset managers to understand what was emerging in the draft LTP as well as what consideration was being given to servicing areas that are not serviced and where infrastructure was not identified in an LTP.

Assumptions made in identifying and documenting Development infrastructure include:

- The Development Infrastructure identified does not include infrastructure constraints that are anticipated to be borne by the private developer. These fall within the scope of the suitability assessment as a consideration that may render land less commercially suitability to develop.
- The areas identified for the purpose of the BCA are serviced, or infrastructure is identified in the Draft or Proposed Long Term Plan or an Infrastructure Strategy. Where an area is not, it is excluded from the assessment of Development Infrastructure.
- For the purpose of the assessment, both the existing and draft LTP for 2018 – 2028 have been considered in determining the Medium-Term supply. This is on the basis that the draft LTP has been through a statutory process including consultation and adoption while also taking into account Council's most up to date position as reflected in the draft.
- In some cases, it is considered inappropriate to discount unserviced industrial land on the basis that it provides an alternative type of industrial land (essentially rural industry) that forms an important role and is currently successfully taken up (e.g., at Chaneys). This is documented in the report.

A4.6 Suitability

Suitability is a requirement for the business capacity assessment. Section 3.30 of the NPS-UD outlines that 'local authorities may define what it means for development capacity to be "suitable" in any way it chooses, but suitability must, at a minimum, include suitability in terms of location and site size'. The following is the methodology for assessing clusters of business land for suitability.

A4.6.1 Selection of Clusters for Analysis

Due to the large quantum of business land in the Greater Christchurch area, the task of completing a site-by-site assessment was not considered practicable in the timeframe. It was therefore determined that the assessment of suitability be undertaken on a cluster basis, each cluster being a sub-area of commercial or industrial activity in the city or town that could be distinguished geographically from other areas, and which had similar characteristics, constraints and zoning provisions. Where a number of smaller clusters were close together and had similar characteristics and/or the same zoning (in respect of undeveloped areas), these were grouped together as a single cluster.

The cluster-based approach also recognised that sites within each cluster may score consistently against some criteria e.g., accessibility to the strategic road network. This approach was agreed with the MBIE[90].

Assessments were completed for all vacant industrial land in the study area and two areas identified in the RPS for future business land, but which where were not rezoned in the Christchurch District Plan review[91].

Assessments were completed for the majority of the commercial centres including emerging centres in new greenfield developments. In Christchurch City, the focus was on centres that had at least 1,000m² of vacant

[90] Confirmed 6/12/2017 meeting with Peter Nunns, MBIE
[91] Hawthornden and Johns Road Greenfield Priority Areas (CRPS)

land; the threshold being determined to prioritise assessments of the most significant parcels of land where development may occur. In Selwyn and Waimakariri districts, all vacant commercial land was assessed and included established and developing town centre environments and local centres.

A4.6.2 Criteria Selection and Weighting

For the original BCA, staff from Councils representing the GCP drafted a set of assessment criteria as a starting point for discussions with representatives of the development sector. This was based on criteria applied elsewhere for assessing the desirability / attractiveness of different locations for development.

Table 45: Assessment criteria used as a starting point in development sector discussions

Retail/Office Activity	Industrial Activity
Size/configuration of sites	Size/configuration of sites
Proximity to housing	Access to arterial roads
Visibility to customers	Proximity to housing
Public transport accessibility	Public transport accessibility
Planning constraints	Planning constraints
Development constraints	Development constraints
Natural constraints	Natural constraints
Infrastructure (private)	Infrastructure (private)
Features/environment (e.g., amenity, parking)	Features/environment (e.g., amenity, parking)
Market availability	Market availability
Legal/property tenure	Legal/property tenure
Resource consent	Resource consent
Price	Price

The key feedback received from the focus group was that:

- Parking availability was best considered as part of a broader 'accessibility' criterion, namely for retail and office activity;
- Land contamination was the key development constraint likely to affect suitability and should be included as a separate criterion;
- Geotechnical and flooding constraints were the key natural constraints likely to affect suitability so could be specified as such;
- While high levels of amenity are relevant, they are not a key consideration with respect to suitability, so should be removed from the assessment criteria;
- Access not just to arterial roads, but to the rail network, port and airport was important for industrial activities;
- Proximity to housing for the workforce was not a key consideration for industrial development but reverse sensitivity could be a concern; and
- Public transport links were not very important for industrial activities.

Some criteria were also combined as a result of discussions (e.g., size/configuration, market availability, and legal/property tenure were combined into single criteria of land assembly and access issues). The focus group also indicated the relative importance that they placed on each of these criteria. This translated into the weighting given to the criteria in the assessments.

Table 46: Weighting given to assessment criteria

Retail/Office Activity	Industrial Activity
Necessary (x4)	Necessary (x4)
Proximity to residential areas	Transport accessibility
Planning constraints	

Very important (x3)	Very important (x3)
Visibility	Planning constraints
Transport accessibility	Natural hazard constraints
Natural hazard constraints	Land assembly
Land assembly	
Somewhat important (x2)	Somewhat important (x2)
Land remediation	Land remediation
Private infrastructure requirements	Private infrastructure requirements

An "other constraint" criteria was also retained to account for other cluster specific constraints such as reverse sensitivity issues, significant community opposition to development, likely archaeological sites or other factors that could affect suitability such as abnormally high land values or low rental rates where known.

The focus group also emphasised the importance of other potential suitability criteria such as overall market demand, costs of material and labour, and access to financing. Whilst the project team agrees that these criteria significantly impact on commercial suitability, these factors were not assessed as part of the MCA. This was on the basis that they could be assumed to apply in a relatively consistent manner across the partnership area at any given point in time (e.g., labour and materials costs), or could vary considerably depending on the individual circumstances of the developer (e.g., access to / need for financing), or in the case of demand, would be assessed as part of the wider BCA. The focus of the assessments was on criteria where it was anticipated that there would be variability between clusters.

A4.6.3 Sources for Suitability Assessments

The suitability assessments were primarily desk-based studies using information available to councils in the timeframes available and supplemented by a survey of the development community and landowners of vacant sites. The latter included follow-up interviews with some respondents and discussions with relevant council experts (Refer below for a summary of this engagement).

Assessments generally relied on existing information as there was not sufficient time or resources to commission additional work (for example, to obtain rental rates for clusters not already studied for the Commercial Centres Fact Sheets project[92] and information contained on Council records and GIS). Where there were multiple sources of information (for example, several geotechnical or contamination investigations for a series of consents on the same site) efforts were made to find the most relevant and up-to-date report but it is likely that further investigations or later remediation work may render some information quickly out of date. By nature, the assessments are a snapshot of a sometimes rapidly evolving landscape.

Key inputs into the assessments were:

1. An online survey was sent to all property owners of vacant sites in the clusters studied asking respondents to rate the relative significance of development constraints in those areas with respect to the criteria identified above. The survey included opportunities to propose additional criteria or to comment in more detail on the constraints.
2. Follow-up interviews were had with most respondents as available to discuss responses in more detail and to identify specific planning constraints identified as causing suitability issues or specific parts of clusters affected by contamination or natural hazards issues.
3. A planning assessment undertaken for each cluster identifying any District Plan rules likely to have a significant impact on suitability and any relevant natural hazards constraints.
4. A review of any relevant land use or subdivision consents issued in the past five years for vacant sites and, in particular, any land contamination or geotechnical reports accompanying them. Vacant sites with a recent consent for a non-industrial or commercial activity and with a high probability of implementation (e.g., consent to rebuild an apartment complex in a mixed-use zone) were noted as making the site not suitable for a business activity.

[92] CCC Urban Regeneration and Strategies Programme project to update baseline information about key commercial centres in Christchurch.

5. A review of the Listed Land Use Register (LLUR) for any vacant sites to identify listed Hazardous Activities and Industries List (HAIL) sites, the extent of previous investigations and the outcomes of more recent Detailed Site Investigations (DSIs) where available.
6. In Christchurch City, for some greenfield areas that were rezoned or investigated for proposed rezoning during the District Plan Review, technical reports informing the s32 report[93] for the proposed rezoning were consulted.
7. In Christchurch City, the Urban Regeneration team regularly prepares Commercial Centre Fact Sheets for most District and Neighbourhood commercial centres and selected local centres. These fact sheets include statistics on the number of residents within a walkable catchment of the centre (based on analysis of 2013 census data), average rental rates for low-end, medium-end and high-end retail and office sites (prepared by CBRE in 2016) and assessments of transport accessibility (prepared by Abley Transport in 2016). These statistics and assessments were drawn on for centres where available, noting that the boundaries of the centres for the Fact Sheets do not precisely line up precisely with the boundaries of the study areas for the suitability assessments in all cases.
8. GIS information was obtained about contaminated sites (as a cross-check to the LLUR), location of public transport, cycle facilities and infrastructure servicing, archaeological sites not scheduled in the District Plan, landfill and uncontrolled fill sites, consent notices, assessments of high liquefaction risk areas and information on the roading hierarchy.
9. For Christchurch City, high level comments were sought from Council experts on liquefaction, flood risk and infrastructure servicing constraints.
10. Lists of current key activities were based on Google Maps and personal familiarity. A limited number of site visits were undertaken to ground truth desk-based research as part of a high-level audit of the vacant land register.

A4.6.5 Scoring Methodology

Scale and weighting

Once information had been gathered to inform the assessment for each criteria, a score was assigned based on the following scale:

0 – Constrained to the extent that development would not be suitable solely on this criteria
1 – Significantly constrained
2 – Moderately constrained
3 – Minor constraint
4 – Minimal or no constraint

Where no information was available, the score was assumed to be a 4. Where there was significant variability between sites in the same cluster (e.g., a 1 for one site and a 3 for another) a median score was generally selected (e.g., 2) except where the size of one site relative to the others and to the overall quantum of vacant land in the cluster suggested that greater weight should be given to that site.

These scores were then weighted to reflect the relative importance assigned to each criteria, based on input from the focus group to arrive at an overall weighted score for the cluster.

The Christchurch City assessments only scored the vacant sites in the cluster and may not reflect the score that would be assigned if the entire area were assessed. For example, there is only one vacant area in Elmwood at the back of existing shops, so this centre scored poorly for visibility even though the developed part of the centre fronts onto an arterial road.

The Selwyn and Waimakariri assessments were initially carried out at the cluster level, with Market Economics Limited utilising the property level information contained within the Selwyn and Waimakariri Capacity for Growth Models to provide a site-by-site analysis of constraints targeted to vacant land holdings. This evaluation was initially based on the information outlined in Section A11.6.4 above but may subsequently integrate property-based land values and related costings to provide a more accurate understanding of the suitability of vacant business land.

General assumptions

The assessments take into account the outcomes anticipated by the district plans for the relevant cluster and the context and scale of each business node. For example, the Christchurch District Plan anticipates local centres will primarily draw customers from within the local catchment, so more consideration was given to walkability, local cycle access and an established residential catchment than to factors including public

[93] An evaluation report (including an assessment of costs and benefits) required under Section 32 of the Resource Management Act for plan/policy changes.

transport access. On the other hand, large format retail centres are assumed to be accessed primarily by car from further afield. More consideration was given to adequate parking provision and less to the number of households in the immediate walkable catchment in this context.

For greenfield emerging centres, current suitability was assessed relative to the proximity and quantum of housing to make the centre viable, including whether it had reached the critical mass to support the centre and sequencing of development had installed the necessary infrastructure. This is on the basis of the NPS-UDC directing an assessment of whether development is currently suitable, not whether it could be suitable to develop in the future.

Some greenfield centres adjoin existing roads while other centres would require new roads to be built to connect to the transport network. Generally, consideration was given to the distance that new roads and other infrastructure would need to traverse to connect into existing systems. Any information on how soon those connections could be expected was also considered. For example, one centre did not have road access, but properties had been purchased to achieve the access required, with the demolition of former buildings completed and consent sought for earthworks. This centre was considered less constrained than sites where multiple landowner approval and/or land purchase was still required to connect the centre to the existing network.

Scoring for Criteria
The following summarises the basis for scores under each criteria.

a. Accessibility to the Transport Network
In Commercial Centres a '4' score was generally given if the centre had direct access to arterial roads and a level of public transport, parking and/or cycling provision consistent with what is anticipated for the type of centre. Lower scores generally reflect:

- emerging centres that do not currently have roads connecting them to the main network (e.g., North West Belfast, Redmund Spur);
- Commercial Office-zoned areas that do not have direct public transport servicing or are serviced by only one low frequency bus route (e.g., Mandeville);
- Neighbourhood or Local centres with a combination of comparatively poor public transport and cycle access, lack of alternative routes in the event of congestion, and less central locations (e.g., Port Hills Road, Lyttelton in Christchurch City and the Falcon's Landing and Geddes/Dryden Trust Neighbourhood Centres in Selwyn)

Industrial Clusters scored a '4' when they had direct access to the arterial road network and reasonably good access to either the rail network, port, or airport.

Clusters which scored lower generally had a number of sites that could only access the arterial road network via local roads, often in close proximity to residential or rural-residential areas or where there were other known constraints such as difficulties associated with upgrading intersections to accommodate heavy vehicle movements.

b. Land Assembly
Clusters generally scored a '4' if there was the potential to easily provide for a range of site sizes (including by subdividing) consistent with other typical developments anticipated in the same zone.
Lower scores reflect:

- a significant proportion of vacant sites in the cluster that were of a shape and/or held in ownership that was not conducive to development (e.g., long narrow sites in multiple ownership, where a row of shops was demolished). These sites would potentially be more difficult to amalgamate, to coordinate rebuilding or to develop as a stand-alone development without reference to the other sites;
- significant earthworks being required on sloped sites.

c. Land Remediation Requirements
Clusters generally scored a '4' where there were no known or potential Hazardous Industries and Activities List (HAIL) sites or where previous investigations indicated that contamination levels were within acceptable guideline levels and/or had been successfully remediated.

Clusters with a '3' generally contain known or suspected HAIL sites that have not been investigated or which have been investigated and require remediation of only discreet hotspots (e.g., as a result of leaking storage tanks).

Clusters with lower scores generally reflects the presence of significant areas of known or probable contamination (e.g., former landfill sites), where the sites have either not been investigated or have been found to exceed guideline levels for commercial or industrial development. Some sites are subject to an ongoing site management plan (SMP) and in the case of other sites, planned remediation had not yet been certified as complete.

d. Location-Specific Private Infrastructure[94]
Most developed clusters scored a '4' on the basis that they did not require significant additional investment in private infrastructure other than standard service connections.

Some greenfield clusters scored lower because existing servicing would need to be extended to reach the cluster or because District Plan Outline Development Plan (ODP) requirements necessitate new roads or intersection upgrades to be installed at the developers cost.

Some District Plan ODPs make development contingent on the installation of larger scale on-site stormwater treatment facilities such as artificial wetlands and green corridors. Where these requirements necessitate coordination between multiple landowners or take up a significant amount of developable land, this could potentially constrain suitability.

e. Natural Hazards
The score for natural hazard constraints was a composite of assessments of risks from liquefaction-induced settlement, flooding and coastal hazards.

Liquefaction
Assessments were completed based on a review of geotechnical reports accompanying recent subdivision consents for vacant sites or proposed plan changes and discussions with Council experts. Generally, these reports referenced minor, moderate, or significant liquefaction and lateral spread risk often in terms of the technical category (TC) system designed for residential developments. This acted as an indicator for overall ground conditions in the context of industrial or commercial developments. TC1 generally indicates unlikely future land damage from liquefaction and TC3 indicates that specific foundations would need to be designed or ground improvement undertaken to address relatively significant risks of liquefaction-induced damage. CCC is currently in the process of updating its modelling for liquefaction risk areas. This work was not available for the present study but could be including in future assessments.

Caution must obviously be applied in extrapolating geotechnical conditions assessed at recently subdivided sites to vacant land across an entire cluster. The geotechnical reports were also generally commissioned for specific development projects which may have varying requirements. A factory using laser-cutting tools will not have the same foundation requirements as a storage shed and a four-storey mixed-use retail and apartment building will not have the same requirements as a corner dairy. Site specific investigations would be required to accurately determine foundation design. Performance can also vary considerably depending on the location of the future earthquake event.

Levels of risk do not always translate directly into levels of costs and hence in reduced suitability. In a large-scale development with varied ground conditions, for example, patches of higher risk TC3-type land could be used for stormwater treatment or parking instead of requiring more complex or expensive foundations. However, for the purposes of the present exercise, increased risk has generally been used as a proxy for increased costs.

For Christchurch City, these assessments were cross-referenced with the Council's existing high-level assessments of liquefaction risk. These were based primarily on observation of performance in the recent earthquake sequences. For clusters where recent geotechnical investigations were not available for specific sites, assessments were based on the extent to which vacant sites intersected known high or moderate liquefaction risk areas. For Selwyn and Waimakariri, these assessments utilised geotechnical information held on the respective Council's GIS systems, which for Selwyn, included layers referencing reports prepared by Geotech Consulting Limited.

Clusters generally scored a '4' where the majority of vacant land was not in an area where future land damage from liquefaction was considered likely. In Christchurch City, this meant the land was not in a Liquefaction

[94] This criteria looks at private infrastructure that would need to be installed at the developer's cost and excludes public network infrastructure. For example, it includes on-site servicing connections to the public network but not upgrades in capacity of the public network required as a result of new development or intensification.

Management Area (LMA), was in an area assessed as have low liquefaction risk and/or had recent geotechnical investigations indicating recently subdivided vacant sites were predominantly TC1-type land.

Clusters generally scored a '3' where the majority of land was in an area assessed as having a minor risk of land damage from liquefaction. In Christchurch City, this meant that most or all of the vacant land was in a LMA and/or recent geotechnical investigations identified a minor risk of liquefaction on the majority of sites with assessments (low end TC1 to high end TC2 or only parts of the cluster affected).

Clusters generally scored a '2' where the majority of land was in an area assessed as having a moderate risk of land damage from liquefaction. In Christchurch City, this meant that the entire cluster was within an LMA, most of the vacant land was in an area identified as moderate risk (potentially with some isolated high-risk areas) and/or recent geotechnical investigations identified an overall moderate risk of liquefaction (TC2 across the cluster, potentially with patches of TC3).

Clusters generally scored a 1 where significant risk from liquefaction were identified. In Christchurch City, this meant that most of the vacant land was in a high-risk area or geotechnical investigations indicated a likely and significant risk (TC3 across a significant portion of the vacant sites).

Flooding and Coastal Hazards
For Christchurch City, flood risk was generally assessed based on the percentage of the vacant sites in a Flood Management Area (FMA) or other overlay area indicating flood risk. Generally, in FMAs, developments are required to raise their floor levels to mitigate flooding risk. Higher floor levels increase construction costs and can constrain design options – for example where part of a relatively small site needs to be dedicated to ramps for disabled access.

Some additional information was provided by survey respondents relating to the floor levels in some clusters. In parts of New Brighton, for example, floor levels for new buildings may be required to be raised almost a metre above the existing ground level.

In Christchurch City, clusters generally scored a '4' where few or none of the vacant sites were located within FMAs. Clusters generally scored a '3' where less than half of the vacant sites were in an FMA. Clusters scored a '2' where more than half of vacant sites were in an FMA and/or where survey responses indicated that high floor levels required for that cluster were a constraint.

Some clusters on the coast have also been modelled as being at significant risk of coastal inundation from a 1 in 100-year return period event in the next 50 years. Industrial or commercial developments may be less sensitive to these risks than residential development because flood-proofing can more easily be integrated into the design (albeit at some additional cost). However, identified risks from coastal hazards can still make approval of financing and insurance more difficult or costly. It may also affect market perception. Clusters with a large percentage of vacant sites in a FMA and in areas identified as at significant risk from coastal hazards scored a '1' for this part of the assessment.

f. Planning Constraints
Clusters were scored on the extent to which the suitability of developing activities anticipated by the zone might be constrained by planning rules specific to that cluster. Generally, the district plan provisions are enabling of the types of activities anticipated for the zone and restrictive of activities not anticipated. Those restrictions were not considered a constraint to development.

Clusters generally scored a '4' where there were no planning rules specific to the cluster or where any specific planning rules (such as setbacks) would likely be covered by the 30% of developable land assumed to be set aside for car parking, landscaping, stormwater requirements and building setbacks[95].

Clusters scored a '3' where there were cluster-specific rules that were somewhat more onerous than other provisions and would likely reduce the amount of developable land by more than 30%. For example, in some clusters there were 20 or 50 metre setbacks for some activities or significant areas set aside for stormwater treatment. Some clusters had additional requirements for acoustic attenuation for office activities near the rail corridor or the airport and this was considered to potentially impose minor additional costs for those activities.

Requirements for urban design assessments were considered a minor constraint where the District Plan requires a resource consent for any new building. While the costs may not necessarily raise suitability concerns

[95] An assumption made in calculating plan enabled capacity of the ratio of building development to site area.

for a large-scale project, some uncertainty around outcomes could have a minor impact on suitability and were perceived by some survey respondents as a development constraint.

Clusters scored a '2' where there were more restrictive provisions, for example, where development could not proceed until specific conditions such as public infrastructure upgrades were met.

Clusters scored a '1' where commercial or industrial activities were not enabled by the zoning, for example in the two proposed industrial areas in Christchurch City that still have rural zoning and where any new industrial activity would require resource consent as a non-complying activity.

Many centres include caps on tenancy sizes (for example 450m2 GLFA for a retail or office activity) however these are not considered to significantly constrain the types of activities anticipated in those zones (supermarkets and department stores were exempt from these rules).

Centres that have overall caps on retail floorspace in the centre and that were known to be close to reaching those caps (e.g., the Specific Purpose Airport Zone retail cap in the Christchurch District Plan and Key Activity Centre Precincts and Neighbourhood and Local Centre thresholds in the Selwyn District Plan), were considered to have a minor to moderate constraint.

g. Proximity to Residential Areas (Commercial only)
Centres scored a '4' where they were generally surrounded by established residential areas. Alternately some centres, like the Central City, had fewer residential areas in close proximity but had a strong visitor accommodation and work catchment from which to draw potential customers.

Centres with lower scores generally had smaller immediate residential catchments relative to other centres of the same type, including greenfield emerging centres where the surrounding residential catchment had not yet been built.

In some cases, centres with comparatively small residential catchments such as Ferrymead and Redcliffs were given higher scores than they would otherwise because they were on a commuter route to the coastal suburbs and could rely on drive-by trade.

Less weight was also given to large format centres and other centres where the market is assumed to be drawn from a wider area.

h. Visibility (Commercial only)
Centres generally scored a '4' where they fronted onto arterial roads and where most of the vacant sites were clearly visible from the road. Centres where the majority of the vacant land fronts onto side streets or is located at the back of existing shops were given a lower score. Where vacant land was not clearly visible from the road but formed part of a destination shopping mall complex (e.g., Linwood/Eastgate), generally the centre scored a '4'.

Local centres providing small convenience shopping were scored a '3' where the sequencing of development had not enabled infrastructure to be established to the boundary of the centre. Some centres had lower scores as a result of relative geographic isolation (e.g., Port Hills Road, Redmund Spur) and the fact that they were not directly connected to the arterial road network.

i. Other Development Constraints
Other potential development constraints have been noted including the presence of heritage buildings, archaeological sites, listed trees, underground semi- or unconfined aquifers, potential springs and sites of significance to Mana whenua.

For Christchurch City, generally heritage buildings and listed trees did not reduce the score for the cluster as impacts on heritage buildings would only be assessed for discretionary or non-complying activities and listed trees could generally be developed around.

Archaeological sites, potential springs, and sites of significance to Mana whenua suggests additional investigations or consultation would be required which could potentially add costs or uncertainty to the development process.

Locations over aquifers was considered a minor constraint for industrial activities as it may restrict the types of activities that can locate there (e.g., wet industries) and the options for stormwater management.

A4.6.6 Sites Assessed as Not Suitable

Sites were assessed as not suitable where they scored a '0' in any one criteria. For example, the compound natural hazards risks associated with some sites in the Bower Avenue Industrial cluster resulted in those sites being assessed as not suitable. A '0' for specific sites, however, did not necessarily mean that the entire cluster was not suitable.

Some sites (e.g., Redmund Spur) were assessed as being not suitable as a result of scoring 1s for multiple criteria. These include greenfield emerging centres where the supporting residential catchment has not yet developed, and lack of servicing and road access would significantly affect commercial suitability in the short term. This does not indicate, however, that those sites will not become suitable at some stage or would never be suitable for niche proposals.

Sites were also assessed as not suitable where they had a recent resource consent with a high probability of implementation for a non-commercial or non-industrial activity (e.g., apartment complexes, fire stations, churches).

However, it must be emphasised that given the complexities inherent in assessing commercial suitability for the full and extensive range of business activities enabled by district plans, at a strategic level and using the methodology recommended in the guidance, our assessment is unlikely to provide an accurate and full assessment of whether land is commercially suitable to develop. Rather, the assessment indicates the major known constraints which may affect suitability (from a planning perspective) and over and above the typical costs involved in developing business land (land price, financing, construction costs, rental/sales values etc.). As such, this assessment provides an indication of which land is more or less suitable, having regard to the assessed factors.

A4.7 Sufficiency

Once identification of demand and supply has been completed, a reconciliation of the two was undertaken to identify whether there is sufficient capacity to accommodate future growth. Unlike the guide, this assessment has been at a quadrant level for the city due to the limitations in determine demand at a zone level.

Appendix 5 – Suitability Assessments

Due to document size restrictions, the appendix is available on the website.

Appendix 6 – Methodology Alignment and Assumptions

The following table outline particular assumptions regarding the methodology and the approach by each TA.

	Matter / question	Christchurch City	Selwyn District	Waimakariri District
1.	Assumptions: Modelling assumptions incl. consumption effect, effect of ageing population	. There is a relationship between employment opportunities and population growth. The model acknowledges that this relationship exists, and as a result a change in one will influence the other. Long-run, historical employment data is sourced from Statistics New Zealand (Stats NZ), Business Demography database and spanning from 2000 to 2020. The employment data of twenty-two (22) industries within the economy are aggregated into six sectors that represent the main users of the land. A vector autoregressive VAR model is used to forecast the level of employment for the 30 years, and captures the relationship between industries within the economy over time. The model considers all the variables (industries) within a matrix format, this captures the complex relationship within the economy. This essentially captures the key concept of economics through the Input-Output concept where forward and backward linkages are modelled. It also assumes that the level of employment in the current period	**Selwyn Economic Forecasts 2019 (SFM)** The economic forecasts developed for Selwyn have been constructed by establishing a set of final demands and then running these demands through an economic model that records the inter industry outcomes that are required to meet those demands. This approach is similar to the 2017 EFM projections, however the key difference is that the final demands relied on are forecasts and the interrelationships vary through time. (a) **Base Date**: Base employment data for each "activity category" from 2019 Stats Business Demographic counts EC series, modified by productivity rates, multi-regional input-output table, etc. (b) **Consumption Demand**: based on population cohort model and household growth (medium-high projection). The spend per households was established using Household Economic Survey, Retail Trade Survey, Market View Card transaction data. Spending consumption effect assumed to grow at 1.4% p.a. Also, the level of local consumption within the model changes over time to recognise that the structure of Selwyn's economy is expected to change as it grows. Specifically, the economic forecasts allow for changes in levels of household demand that is served within the District (self-sufficiency). (c) **Investment Demand**: investment demand estimates (Gross Fixed Capital Formation - GFKF) were generated by applying long-run average growth rates in capital formation to the base year GFKF estimates by industry, as obtained from the multi-regional input-output table. The growth rates are determined from statistical time series (econometric) analysis of the national level data.	**Waimakariri Economic Forecasts 2019 (WFM)** The economic forecasts developed for Waimakariri have been constructed by establishing a set of final demands and then running these demands through an economic model that records the inter industry outcomes that are required to meet those demands. This approach is similar to the 2017 EFM projections, however the key difference is that the final demands relied on are forecasts and the interrelationships vary through time. (a) **Base Date**: Base employment data for each "activity category" from 2019 Stats Business Demographic counts EC series, modified by productivity rates, multi-regional input-output table, etc. (b) **Consumption Demand**: based on population cohort model and household growth (medium-high projection). The spend per households was established using Household Economic Survey, Retail Trade Survey, Market View Card transaction data. Spending consumption effect assumed to grow at 1.4% p.a. Also, the level of local consumption within the model changes over time to recognise that the structure of Waimakariri's economy is expected to change as it grows. Specifically, the economic forecasts allow for changes in levels of household demand that is served within the District (self-sufficiency). (c) **Investment Demand**: investment demand estimates (Gross Fixed Capital Formation - GFKF) were generated by applying long-run average growth rates in capital formation to the base year GFKF estimates by industry, as obtained from the multi-regional input-output table. The growth rates are determined from statistical time series (econometric) analysis of the national level data.

		affects the next period's employment level. This is evident in the historical employment values within most economies, as next year's level of employment adjusts to what it was in this year. It is assumed that all growth will be /new development unless otherwise stated	Selection of the time series technique applied depends on the underlying dynamic behaviour of the sector output being analysed. Where historical observations fluctuate around a long-run mean, stationary time series methods are applied (e.g., the AMRA process). (d) **Export Demand**: future exports are generated by applying national long-run average growth rates for export commodities by sector to the 2015-16 international export estimates obtained from a multi-regional input-output table. The long run growth rates by export commodity are determined according to econometric analysis and the choice of technique applied depends on the underlying dynamic behaviour of the sector being analysed. The data utilised in this time series analysis is derived from Statistics New Zealand's Harmonised System data for commodity exports and Balance of Payments for exports of services. Regional growth rates in exports by sector are assumed to be consistent with the estimated national growth rates determined through these methods. For some industries that rely on primary outputs, levels of export demand have been forecast based on the potential level of farming activity that is possible within the region. (e) **Business Demand**: the IO modelling approach is adopted, which records business-2-business transactions. However, the interrelationships within the model are modified to recognise that the structure of Selwyn's economy is expected to change. The economic forecasts allow for changes in levels of demand (self-sufficiency) and the range of economic activity that is viable within the District (business-to-business). (f) **Productivity:** productivity within the economy increases by approximately 0.5% per annum. However, this rate of change differs for each industry in the economy.	Selection of the time series technique applied depends on the underlying dynamic behaviour of the sector output being analysed. Where historical observations fluctuate around a long-run mean, stationary time series methods are applied (e.g., the AMRA process). (d) **Export Demand**: future exports are generated by applying national long-run average growth rates for export commodities by sector to the 2015-16 international export estimates obtained from a multi-regional input-output table. The long run growth rates by export commodity are determined according to econometric analysis and the choice of technique applied depends on the underlying dynamic behaviour of the sector being analysed. The data utilised in this time series analysis is derived from Statistics New Zealand's Harmonised System data for commodity exports and Balance of Payments for exports of services. Regional growth rates in exports by sector are assumed to be consistent with the estimated national growth rates determined through these methods. For some industries that rely on primary outputs, levels of export demand have been forecast based on the potential level of farming activity that is possible within the region. (e) **Business Demand**: the IO modelling approach is adopted, which records business-2-business transactions. However, the interrelationships within the model are modified to recognise that the structure of Waimakariri's economy is expected to change. The economic forecasts allow for changes in levels of demand (self-sufficiency) and the range of economic activity that is viable within the District (business-to-business). (f) **Productivity:** productivity within the economy increases by approximately 0.5% per annum. However, this rate of change differs for each industry in the economy.
2.	Rates for conversion of employment projections to land/ floorspace	The ratios are based on 1st level ANZSIC categories broken down in some instances to 2nd level to account for sectors such as warehousing and logistics.	Assessment of the current location of employment compared to zone to understand the nature of employment that locates in each zone. The economic activity in each zone was then compared to the floorspace in each location to establish	Assessment of the current location of employment compared to zone to understand the nature of employment that locates in each zone. The economic activity in each zone was then compared to the floorspace in each location to establish

		There are 5 land demand models, each forecasting land demand for the various markets. Each of these has it's own set of key assumptions.	current productive – i.e., gross floorspace per worker (workspace ratio). Conversion of future growth based on the following conservative assumptions: • All growth locates in new space. This is a conservative assumption because the productivity of existing space will probably support some of the future growth. • Productivity remains constant in the future. This is a conservative assumption because productivity has been increasing. • Zone preference of each sector is constant at the existing rates. This is a conservative assumption because the traditional bricks/mortar location of businesses may change in the future with disruptive technologies. Broadly, we consider that these assumptions are conservative and will overstate the demand for floorspace.	current productive – i.e., gross floorspace per worker (workspace ratio). Conversion of future growth based on the following conservative assumptions: • All growth locates in new space. This is a conservative assumption because the productivity of existing space will probably support some of the future growth. • Productivity remains constant in the future. This is a conservative assumption because productivity has been increasing. • Zone preference of each sector is constant at the existing rates. This is a conservative assumption because the traditional bricks/mortar location of businesses may change in the future with disruptive technologies. Broadly, we consider that these assumptions are conservative and will overstate the demand for floorspace.
3.	Office	Assume space demand of 39sqm per employee on average. Uses recent building activity data and employment data from the Business demography database (StatsNZ) to measure the relationship between office space and the level of employment. The space per worker includes all the living spaces, hard and soft landscaping associated with the office. Industry norms and trends reveal that the average effective office space per worker is between 14sqm and 20sqm excluding the landscaping component	As discussed above, assessment of workspace ratio was undertaken at the zone level.[1] The vast bulk of buildings in the District are single level, therefore all sectors compete for the same ground floor space. Therefore, the growth model assesses all demand for the ground floor area together. There is no attempt to estimate which type of sector would 'win' in each area. In Business 1 where the vast bulk of office and retail locates the workspace ratio ranges from 30m^2 to 60m^2, with an average of 39.9m^2. Purpose built (newer) spaces may achieve a higher density. However, it is conservative to apply the existing achieved rate which overstates the demand for floorspace. SCGM2019 allows the user to select one of three scenarios of density: • Low: 60m^2 per job. • Medium: 40m^2 per job. • High: 30m^2 per job.	As discussed above, assessment of workspace ratio was undertaken at the zone level. The vast bulk of buildings in the District are single level, therefore all sectors compete for the same ground floor space. Therefore, the growth model assesses all demand for the ground floor area together. There is no attempt to estimate which type of sector would 'win' in each area. In Business 1 and Business 4 where the vast bulk of office locates the workspace ratio ranges from 30m^2 to 70m^2, with an average of 44.0m^2. Purpose built (newer) spaces may achieve a higher density. However, it is conservative to apply the existing achieved rate which overstates the demand for floorspace. WCGM2019 allows the user to select one of three scenarios of density: • Low: 70m^2 per job. • Medium: 40m^2 per job. • High: 30m^2 per job.

4.	Retail	Point of sale data, sourced from MarketView, is used for the retail analysis. This enables retail spending trend analysis on a small area level and enables the model to reflect local spending trends. Inflationary pressure or change in density is assumed to stay near 1%. The intensity of use for retail activity reveals a floor area ratio (FAR) of 0.35 (sourced from CCC land use information, this ratio is an indication of the existing retail establishment's building size as a percentage of the total site size). Increasing this use-intensity for properties below a FAR of 0.35 would improve use intensity and would reduce the amount of land required to support new demand.	As discussed above, assessment of workspace ratio was undertaken at the zone level.[2] The vast bulk of buildings in the District are single level, therefore all sectors compete for the same ground floor space. Therefore, the growth model assesses all demand for the ground floor area together. There is no attempt to estimate which type of sector would 'win' in each area. In Business 1 where the vast bulk of office and retail locates the workspace ratio ranges from 30m^2 to 60m^2, with an average of 39.9m^2. Purpose built (newer) spaces may achieve a higher density. However, it is conservative to apply the existing achieved rate which overstates the demand for floorspace. SCGM2019 allows the user to select one of three scenarios of density, • Low: 60m^2 per job. • Medium: 40m^2 per job. • High: 30m^2 per job.	As discussed above, assessment of workspace ratio was undertaken at the zone level. The vast bulk of buildings in the District are single level, therefore all sectors compete for the same ground floor space. Therefore, the growth model assesses all demand for the ground floor area together. There is no attempt to estimate which type of sector would 'win' in each area. In Business 1 and Business 4 where the vast bulk of office locates the workspace ratio ranges from 30m^2 to 70m^2, with an average of 44.0m^2. Purpose built (newer) spaces may achieve a higher density. However, it is conservative to apply the existing achieved rate which overstates the demand for floorspace. WCGM2019 allows the user to select one of three scenarios of density, low, medium and high. • Low: 70m^2 per job. • Medium: 40m^2 per job. • High: 30m^2 per job.
5.	Industrial	Regional industrial output trends reveal increased levels of output, which is being driven by increased levels of capital utilisation without a significant change in labour input. This suggests that the marginal rate of technical substitution supports higher use of capital than labour during production. Short term productivity growth for the industry averaged 3.3% for Christchurch City, slightly below the long-term average of 4.8%; the short-term growth rate(3.3%) has been applied in the model. The land demand requirement assumes all new development is greenfield.	120 – 180 m^2 per worker. This is based on Based on work conducted by M.E on industrial land in other TAs and calibration to the level of floorspace observed in the Business zones. SCGM2019 allows the user to select one of three scenarios of density: • Low: 180m^2 per job. • Medium: 169m^2 per job. • High: 120m^2 per job.	90 – 120 m^2 per worker. This is based on Based on work conducted by M.E on industrial land in other TAs and calibration to the level of floorspace observed in the Business zones. WCGM2019 allows the user to select one of three scenarios of density: • Low: 120m^2 per job. • Medium: 100m^2 per job. • High: 90m^2 per job.

		Increasing the use intensity for properties below a FAR or 0.32 would improve the use intensity, reducing the amount of land required to support new demand.		
6.	Warehousing & logistics	The short-term productivity growth for the industry averaged 2.8% for Christchurch City, slightly below the long-term average of 4.4%. The short-term growth rate (2.8%) is applied in the model. A relationship between industry output (StatsNZ) and new building activity (StatsNZ) is utilised in the model. This relationship allows the model to convert the output into space demand inclusive of services, hard and soft landscaping. Increasing this use-intensity for properties below a FAR of 0.43 would improve use-intensity and would reduce the amount of land required to support the new demand.	Selwyn has commissioned research on the warehousing and logistics, which has become a significant driver of land demand in the district since the two inland ports begun operation. This research is underway, and may result in adjustments to the industrial land demands for the District, which will go beyond the level forecast in the SFM 2019.	
7.	Accommodation	The model applies employment to space ratio, estimated from building activity and new employment from SNZ. A worker space requirement of 68sqm is applied in this model, based on the current medium to high density hotel establishments within the Merivale, Central City and Riccarton areas. The underlying assumption is that the majority of short-stay accommodation establishments will mirror these. Increasing the use intensity for properties below a FAR of 0.47 would improve the use intensity and would	Mostly not modelled as much of these sectors locate in non-business zones. Only models the proportion of each sector that is currently located in the business zones. The workspace ratios depend on the zone (see above).	Mostly not modelled as much of these sectors locate in non-business zones. Only models the proportion of each sector that is currently located in the business zones. The workspace ratios depend on the zone (see above).

		reduce the amount of land required to support new demand.		
8.	% leakage/ retention from Christchurch to Selwyn (and vice versa)	Point of sale retail data, sourced from Marketview, is used for the retail analysis. This enables retail spending trend analysis on a small area level and enables the retail model to reflect local spending trends (including any leakage). The business demography data used as the basis for the modelling already contains a certain level of employee "leakage". By using the business demography to project forward, the model assumes that there will be a natural leakage within the employee market.	Based on Market View Card transaction data. Also, the level of local consumption within the model changes over time to recognise that the structure of Selwyn's economy is expected to change as it grows. Specifically, the economic forecasts allow for changes in levels of household demand that is served within the District (self-sufficiency). Given the proximity of Selwyn to a large metropolitan centre (Christchurch), it is likely that there will always be a sizable amount of leakage of household demand out of the District. However, much of the leakage will relate to goods that are infrequently purchased (whiteware, furniture, electronics, etc.) or specialist items that cannot be supplied in the smaller economy (fine dining, entertainment, artisan goods, etc.). For the economic forecasts it is assumed that self-sufficiency continues to improve, the improvements are assumed slow over the coming decades. The following changes to self-sufficiency are applied: • **Medium Term**: slower improvements in self-sufficiency over the coming decade, at an annual rate that is a third of the level observed in the card transaction data. • **Long Term**: minimal improvements in self-sufficiency over the period 2029-2038, at an annual rate that is a fifth of the level observed in the card transaction data. • **Longer Term**: limited improvements in self-sufficiency over the period 2039-2053, at an annual rate that is a tenth of the level observed in the card transaction data.	N/A
9.	% leakage/ retention from Christchurch to Waimakariri (and vice versa)	Point of sale retail data, sourced from Marketview, is used for the retail analysis. This enables retail spending trend analysis on a small area level and enables the retail model to reflect local	N/A	Based on Market View Card transaction data. Also, the level of local consumption within the model changes over time to recognise that the structure of Waimakariri's economy is expected to change as it grows. Specifically, the economic forecasts allow

		spending trends (including any leakage). The business demography data used as the basis for the modelling already contains a certain level of employee "leakage". By using the business demography to project forward, the model assumes that there will be a natural leakage within the employee market.		for changes in levels of household demand that is served within the District (self-sufficiency). Given the proximity of Waimakariri to a large metropolitan centre (Christchurch), it is likely that there will always be a sizable amount of leakage of household demand out of the District. However, much of the leakage will relate to goods that are infrequently purchased (whiteware, furniture, electronics, etc.) or specialist items that cannot be supplied in the smaller economy (fine dining, entertainment, artisan goods, etc.). For the economic forecasts it is assumed that self-sufficiency continues to improve, the improvements are assumed to slow over the coming decades. The following changes to self-sufficiency are applied: • **Medium Term**: slower improvements in self-sufficiency over the coming decade, at an annual rate that is a third of the level observed in the card transaction data. • **Long Term**: minimal improvements in self-sufficiency over the period 2029-2038, at an annual rate that is a fifth of the level observed in the card transaction data. • **Longer Term**: limited improvements in self-sufficiency over the period 2039-2053, at an annual rate that is a tenth of the level observed in the card transaction data.
10.	Plan enabled capacity – Activities enabled.	Activities that are Permitted, Controlled, or Restricted Discretionary.	Activities that are Permitted, Controlled, or Restricted Discretionary – in SDC this is more relevant for allocating demand. The Activity types have very little impact on the scale of plan enabled capacity (i.e., how much floorspace can be built).	Activities that are Permitted, Controlled, or Restricted Discretionary – in WDC this is more relevant for allocating demand. The Activity types have very little impact on the scale of plan enabled capacity (i.e., how much floorspace can be built).
11.	Zones not deemed to be developable	Roads, parks, other Council land e.g., stormwater areas, designations for specific uses.	Roads, railways; rivers, streams and other hydro; legislated sites (reserves near motorways or rivers), local recreation (Council reserves). Designated land not taken into account.	Roads, railways; rivers, streams and other hydro; legislated sites (reserves near motorways or rivers), local recreation (Council reserves). Designated land not taken into account.

12.	Assumed FAR (applied to establish "Zone **Modified** enabled capacity")	Retail: 0.35; Office: 0.5; Industrial: 0.32; Warehousing: 0.43; Short Stay Accommodation: 0.47	The plan enables a large amount of theoretical supply – maximum potential developable is much larger than the market is likely to achieve. Therefore, the growth model develops a "Modified" capacity which is in line with what has been achieved in each zone. This is a similar concept to the residential capacity where in most cases developments do not (or are unable to) subdivide or develop to the maximum allowable level in the plan. The Modified Capacity is based on statistical analysis of the parcel level FAR in each business zone (existing development). Model allows user to model three settings 70th 80th and 90th percentile for each zone. This represents achievable/realistic development potential, which is much less than the plan enabled capacity **Assumed FARs** Business 1 (Centre) 0.45 Business 2 (Industrial) 0.47	The plan enables a large amount of theoretical supply – maximum potential developable is much larger than the market is likely to achieve. Therefore, the growth model develops a "Modified" capacity which is in line with what has been achieved in each zone. This is a similar concept to the residential capacity where in most cases developments do not (or are unable to) subdivide or develop to the maximum allowable level in the plan. The Modified Capacity is based on statistical analysis of the parcel level FAR in each business zone (existing development). Model allows user to model three settings 70th 80th and 90th percentile for each zone. This represents achievable/realistic development potential, which is much less than the plan enabled capacity **Assumed FARs** Business 1 + 4 (Centre and Local Centre) 0.75 Business 2 + 5 (Industrial and Business Park) 0.49
13.	Ratios applied for conversion of retail floorspace between gross and net.		No assumption required as this is implicitly accounted in the calculation of the Workspace ratio – see above. The growth model uses actual data so no assumption is required.	No assumption required as this is implicitly accounted in the calculation of the Workspace ratio – see above. The growth model uses actual data so no assumption is required.
14.	Assumed height per storey?		Permitted activity rules on height determine the total height. But the model does not report on this as the key output is modified potential that is more realistic.	No Bulk and location modelling. Model does not report on this as the key output is modified potential that is more realistic.
15.	Assumed to be above ground floor only?	Yes	Offices assumed to be at ground floor. All activities compete for the same space. The nature of the economy in these areas means that there are very few/no high-rise developments. It is conservative to assume that this will continue in the future.	Offices assumed to be at ground floor. All activities compete for the same space. The nature of the economy in these areas means that there are very few/no high-rise developments. It is conservative to assume that this will continue in the future.
16.	Is land used for storage treated as vacant? Other examples?	No – see above re vacant land methodology.	The Growth Model will identify land as vacant if it doesn't have a consented building.	The Growth Model will identify land as vacant if it doesn't have a consented building.

17.	Single level only?	Single level	Single level	Single level
36.	Slither of second zoning (page 26 of 'Working notes').	Each zoned portion of a parcel is treated separately	SCGM same as WCGM	Where 98% or more of a parcel is in one zone and less than 1,000 m2, then the whole parcel is treated as within the same zone.
37.	Small amount of land (less than 100m^2) in another zone e.g., accessway (page 26 of 'Working notes').	Land parcels of less than 100 m2 excluded. Narrow accessways manually reviewed and excluded from VLR unless there is sufficient width for a building.	Where area is less than 100m2, the whole parcel is treated as within the same zone.	Where area is less than 100m2, the whole parcel is treated as within the same zone.
38.	Parcels where a larger amount of land is split (page 27 of 'Working notes').		Two scenarios presented: Residential/ Rural Business/ Residential Assessment made based on context e.g., site on edge of a larger business zone with a portion within a residential zone is treated as Business.	Two scenarios presented: Residential/ Rural Business/ Residential Assessment made based on context e.g., site on edge of a larger business zone with a portion within a residential zone is treated as Business.
39.	Greenfield areas with split zoning i.e., where parcel boundaries do not follow zone boundaries i.e., zoning ahead of subdivision (page 28 of 'Working notes').		Split according to spatial area of the zone (unless falling within categories above).	Split according to spatial area of the zone (unless falling within categories above).
40.	Extent of which capacity for non-business activities excluded?	**TBC**	Assumed that no residential or retirement villages locate in commercial zones. Based on assessment of commercial zones little/no residential or retirement village activity has located in commercial zones in the past. [3]	Assumed that no residential or retirement villages locate in commercial zones. Based on assessment of commercial zones little residential or retirement village activity has located in commercial zones in the past. [4]
41.	Extent to which capacity taken account of in non-business zones	The model does not account for space in non-business zones.	The SCGM does not model the requirement for business space in non-business zones. The SCGM allocates growth in employment in each sector to the business and non-business zones according to the existing location of the sector (see discussion above).	The WCGM does not model the requirement for business space in non-business zones. The WGM allocates growth in employment in each sector to the business and non-business zones according to the existing location of the sector (see discussion above).

			The employment that locates in non-business zones is not modelled from this point forward i.e., it is assumed that these businesses can find a location to operate. For example: **Rural** - much of the rural sector (farming) will locate in Rural Zones. No attempt is made to understand whether there is enough land (or floorspace) in the rural zone to enable these sectors to grow. **Home Offices:** do not impact on the potential capacity of the residential zone for housing. **Community**: some important business activities locate in the residential zone (e.g., schools, hospitals etc.). These activities compete for residential land. In the model current community businesses are removed using legal title, rates type and designations. No attempt is made to establish where new demand for schools or hospitals will be in the future. The location of these services is a central government decision that cannot be modelled reliably.	The employment that locates in non-business zones is not modelled from this point forward i.e., it is assumed that these businesses can find a location to operate. For example: **Rural** - much of the rural sector (farming) will locate in Rural Zones. No attempt is made to understand whether there is enough land (or floorspace) in the rural zone to enable these sectors to grow. **Home Offices:** do not impact on the potential capacity of the residential zone for housing. **Community**: some important business activities locate in the residential zone (e.g., schools, hospitals etc.). These activities compete for residential land. In the model current community businesses are removed using legal title, rates type and designations. No attempt is made to establish where new demand for schools or hospitals will be in the future. The location of these services is a central government decision that cannot be modelled reliably.
42.	Size distribution adopted for vacant land analysis	Less than 1000m^2, 1000-5000m^2, 5000m^2 – 1ha, 1ha – 2ha, 2ha – 5ha, greater than 5ha.	Data is recorded at the current parcel level. Split by site size is not an output.	Data is recorded at the current parcel level. Split by site size is not an output.
43.	Capacity inclusive of greenfield areas not zoned	Yes – Hawthornden block (35ha) and 711 Johns Road (15ha) identified in long-term supply only. There are identified as Greenfield Priority Areas in the RPS but were not zoned through the District Plan Review. No other rural land is considered.	Covers existing zones and future residential zones. However, **no** future **business zones** have been identified or modelled in the greenfield areas. Considered as a location for dwellings and business activity. Assumes that the current revealed preferences for dwellings and business activity in the rural area continues at the current level.	Covers existing zones and future residential zones. However, **no** future **business zones** have been identified or modelled in the greenfield areas. Considered as a location for dwellings and business activity. Assumes that the current revealed preferences for dwellings and business activity in the rural area continues at the current level.

44.	Any District Plan limitations to floorspace supply e.g., floorspace or tenancy caps	Yes, numerous of each, depending on zone and use– see 17/873590.	Implicitly accounted for as the existing uses provide an indication of what types of activities are enabled in a zone. The model assumes that these activity types will continue in the future. Modelling every activity status and tenancy caps was beyond the scope of the work.	Implicitly accounted for as the existing uses provide an indication of what types of activities are enabled in a zone. The model assumes that these activity types will continue in the future. Modelling every activity status and tenancy caps was beyond the scope of the work.

Huihui Mai

Community Engagement Report 2023



Huihui Mai
Let's come together

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Introduction

Over the past 15 years, Christchurch and surrounding towns have grown rapidly. By 2050, more than 700,000 people are projected to be living in the Christchurch, Selwyn and Waimakariri districts – 30% more than there are today, with the population potentially doubling to 1 million people within the next 60 years, if not earlier.

To help avoid future growing pains, the Whakawhanake Kāinga Committee (Urban Growth Partnership for Greater Christchurch) asked residents how they thought we should tackle important issues such as responding to climate change, preserving the environment, making our region more resilient to natural disasters, and making housing more affordable.

The Huihui Mai engagement took place between 23 February 2023 to 3 April 2023, and had five objectives:

1. To explain and raise awareness of the Greater Christchurch Spatial Plan and the role of the Urban Growth Partnership.
2. To let the community know about the proposed 'turn up and go' public transport service and route.
3. To ask the community for feedback on the work done to date on the draft Greater Christchurch Spatial Plan, the 'turn up and go' public transport service (Mass Rapid Transit, MRT) investigation and the Transport Plan.
4. To deliver a visible and engaging campaign that encourages the community to talk about how we plan for, and adapt to, the future challenges facing Greater Christchurch, including population growth and climate change with a clear line of sight to intergenerational wellbeing and the community aspirations articulated through community engagement in 2020.
5. To engage with the many audiences that make up the Greater Christchurch community, encouraging active and meaningful participation by stakeholders and the public.

The Urban Growth Partnership for Greater Christchurch

Local councils, mana whenua, and the Crown set up the Whakawhanake Kāinga Komiti (Urban Growth Partnership for Greater Christchurch) in 2022 to collectively plan for our future growth.

Together the Partnership will leverage the tools, resources and investment needed to make transformative change in Greater Christchurch with regard to housing, land use and infrastructure planning.

The partners include:

- Mana whenua
- Environment Canterbury
- Christchurch City Council
- Selwyn District Council
- Waimakariri District Council
- Te Whatu Ora – Health New Zealand
- Waka Kotahi NZ Transport Agency
- Crown (led by Te Tūāpapa Kura Kāinga - Ministry of Housing and Urban Development, Kāinga Ora, Te Tari Taiwhenua - Department of Internal Affairs)



How we engaged

Our engagement approach was designed to achieve reach across our communities, with a particular emphasis on young people, and provide the opportunity for face-to-face discussion.

The engagement included:

1. Highly visible communication activity to reach as many people as possible.
2. A simple online survey that was easy to use and mobile-friendly.
3. Workshops - we held three workshops in different locations (Rangiora, Rolleston, and University of Canterbury) across Greater Christchurch to provide an opportunity for people to participate in group discussions about the work. The workshops had a standard format, but the questions reflected the local context for the area in which they were hosted.
4. Webinar – we held a webinar to provide an introduction to the work we were seeking community feedback on and provide the opportunity for the audience to ask questions.
5. Drop-ins – we held four drop-in sessions at local libraries to provide an opportunity for people to speak to project team members about the work.
6. A dedicated youth engagement stream that included workshops in schools and with youth organisations and a Youth Summit to review all the feedback.
7. We met with some key representative groups including One Voice, the Christchurch City Council Multi-Cultural Advisory Group, the Property Council, and the Canterbury Employers Chamber of Commerce.
8. Activations – to increase awareness and promote the survey a series of activations were held in high foot traffic areas that centred around a large photo wall that asked – "What should Greater Christchurch look like in 2050?" Over the duration of the campaign the photo wall and associated collateral at various locations, including the University of Canterbury and Lincoln University, Riverside, Ohoka and Lincoln Farmers Markets, Tūranga, Ruataniwha Kaiapoi Civic Centre and the Lincoln Events Centre.
9. We received email questions and feedback.
10. We held bi-laterals with urban development partners such as infrastructure providers and developers.

Key themes

Over the six weeks of the engagement, over 7,000 people did the online survey, with additional feedback collected at drop-in sessions and workshops. This report details the feedback that resulted from this engagement.

The vast majority of people agree with the direction to focus growth around key urban and town centres and along public transport routes	A significant majority of people (86%) agreed that future population and business growth should be accommodated through focusing growth around key urban and town centres and along public transport routes. This was true for at least 74% of people across all demographic groups (by age, ethnic identity, gender identity, disability status, household type and where they lived).
Many people are open to high density living, but it needs to be planned and designed to meet their different needs and provide quality of life for people	39% of people were open to living in high density housing in the future, with a further 17% of people saying they might consider it in some situations. When considering high density housing / targeted intensification, people were most concerned that consideration was given to the following factors when high density housing is planned and built: • Provision of green spaces • The quality and design of high density buildings and neighbourhoods • Making housing affordable • Provision of key amenities close by, including good public transport provision • Catering for the different social, physical and cultural needs of different groups in the community. Specific mention was made of the needs of older people and those with mobility issues, multi-generational and extended family groups • Continuing to provide lifestyle choice – high density living does not cater to everyone's needs. Access to green spaces, gardens and green neighbourhoods is a strong theme throughout all the engagement. The importance of catering for the development of aged care facilities as the proportion of older people in the population increases was identified. Access to amenities is not equally distributed across our area, meaning different solutions are required in different areas. How our urban centres and towns evolve as our population grows varies depending on the opportunities and the priorities of the local communities. A notable minority (greater than 25%) of people who lived in the districts are open to high density living and using public transport now or in the future, with the right improvements or considerations.
We need to protect Greater Christchurch's role as a national and regional logistics hub	Protecting freight roads (rail and road) and regional connectivity were identified as important, as this provides for growth in inland ports and facilitates freight movements.

People want effort focused on all aspects of the natural environment, with particular importance placed on improving the health of our waterways	Improving the health of our waterways is a top priority for everyone, irrespective of where they live, but they also want effort focused on improving habitats for indigenous plants and animals, providing more green spaces and trees, and protecting farmland.
Over half of people agree with the suggested 'turn up and go route'. Where they don't agree, it's mainly about wanting enhanced public transport / extension of the route where they live	Over 50% of people agree with the suggested 'turn up and go' route with the remainder evenly split between don't agree and don't know. For those who don't agree, extending the route to Rolleston, Eastern Christchurch, Rangiora and South Christchurch were all identified. Frequency and reliability were also identified as the most important characteristics of the 'turn up and go' service (consistent with feedback on public transport more generally). There are quite different opinions across demographic groups as to the relative importance of different road uses when road space is limited in parts of the suggested 'turn up and go' route. Overall, cycle-ways scored highest followed by car lanes and pedestrian space, but people's preferences varied significantly based on where they lived, their age, their disability status and their household type. In more in-depth discussion during workshops, webinar and drop-ins, consideration of the existing rail corridors was raised as an option for the future of Greater Christchurch's public transport system. A significant majority of people who live in suburbs along the suggested 'turn up and go' route are supportive of the suggested route, are open to high density living and using public and active modes of transport more.
To use their cars less, people want more frequent, more reliable and more direct public transport	Almost 40% of people use public transport, cycling and walking all or most of the time to get around, and almost 40% never use those modes of transport. The most important factors that would encourage people to use public transport more to get around are to improve the frequency and reliability of public transport, and provide more direct public transport routes.
Partnership and communication between urban development partners needs to improve to achieve better outcomes	Partnership and communication is important to provide clarity, confidence, and certainty for investment, and to ensure urban development meets the needs of people and business as urban areas intensify.
There are some barriers and challenges to shift the balance of commercial residential development from greenfield to higher density housing	Some developers raised concerns about placing limits on greenfield development and pushing for higher densities when it's not commercially feasible. Barriers to development experienced by developers included consenting processes, uncertainty and additional costs of development imposed by regulation.

PART 1:
Hearing from our communities

How we reached people

A multifaceted approach was utilised over the six weeks of the engagement to encourage a wide cross-section of Greater Christchurch residents to have their say.

The majority of communication efforts focused on encouraging people to visit www.greaterchristchurch.org.nz so they could carry out a simple online survey.

A Huihui Mai brand was created and collateral developed which featured illustrations showing a possible future state transposed over recognisable photos from across Greater Christchurch.

Tools used to widely share the campaign's messages included advertising, traditional and social media and outreach to organisations and groups who could share messages to their own networks.

Media engagement

Media was an important channel to inform residents about the Huihui Mai engagement including how they could find out information about the Spatial Plan and suggested 'turn up and go' public transport service and route, upcoming webinars and workshops and how to give their views through the online survey.

The engagement period was opened on 23 February with a media release from Huihui Mai and the Minister of Transport, Minister Wood.

From a communications perspective, it was important that stories appeared in well-read media in Christchurch City, Waimakariri and Selwyn Districts. A media release was distributed to wider local and national media (TV, radio and newspapers), with a story on Stuff on 23 February attracting over 170 comments. Media updates were distributed to local media over the course of the campaign.

Stories were posted on the Waimakariri and Selwyn District Council websites. To avoid confusion with Christchurch City Council's consultation on Plan Change 14, Christchurch City circulated information through its social media channels, rather than running on its Newsline channel.

Advertising

A wide variety of paid advertising was utilised over the course of the campaign, with the overall goal being to drive traffic through to www.greaterchristchurch.org.nz so people could take the survey.

Key metrics are provided below:

Social media advertising

The campaign reached 233,537 individual users on Facebook and Instagram. On average, users saw the campaign four times over the campaign period, resulting in 940,173 total impressions.

TikTok advertising reached 261,444 people and resulted in 1,615 people going to the website. 25,467 people were reached on LinkedIn, with 513 people clicking on the advert.

Programmatic display advertising

Programmatic display advertising was used to target online advertising to target audiences. In total, the display activity delivered 878,512 impressions and drove 787 clicks to the website.

Video

A 30 second video was played across Stuff, NZ Herald, TVNZ+ and YouTube. The video achieved 373,869 impressions, with a very pleasing 32% of users watching the video to the end.

Google Performance Max

Google Performance Max optimizes ads, so they reach specific audiences across multiple channels. Over the course of the campaign, 1.3 million impressions were delivered, with a high click-through rate of 2.27%.

Stuff, NZ Herald and ethnic media advertising

Advertising on Stuff.co.nz delivered over 2 million impressions and achieved 4,785 clicks. A sponsored content story on Stuff featuring Professor Paul Dalziel and Mayor Sam Broughton achieved over 3100 page views, while the average time people spent on this page was 1 minute and 5 seconds.

Advertising on the NZ Herald website delivered 147,927 impressions and achieved 1,604 link clicks.

Advertising on skykiwi.co.nz achieved 188,178 impressions (118 clicks) while WeChat advertising achieved 126,043 impressions and resulted in 8,422 shares.











Radio

A mixture of live radio and digital streaming content was used to ensure we reached all audiences across Greater Christchurch. Huihui Mai content was heard across Flava, ZB, Hits, ZM, Magic, More FM, The Edge, The Sound, Mai, FM The Breeze, The Rock and Today FM.

For the digital audio activity, we utilised a mix of podcasts, live streaming and adlibs to ensure we were reaching the youth audience.

Out of Home

A wide range of out of home advertising was used to promote brand awareness. This included:

- Large Digital Billboards 48
- Bus Backs 6
- Bus Kerbsiders 6
- Digital Bus Shelters 30
- Static Bus Shelters 16
- Digital Retail Screens 17
- Dairy Posters 12
- Street Posters 86
- University Digital Screens 4

Print

Over the course of the campaign advertisements were placed in the following newspapers:

- The Christchurch Star
- Local community papers – Pegasus Post, Bay Harbour News, North Canterbury News, Southern View, Western News, Nor'west News, and the Selwyn Times
- The Press

Social media and video creation

Social channels were created on Instagram, Facebook and TikTok to encourage a conversation about how residents wanted Greater Christchurch to grow. To promote engagement a series of videos were created and shared across these social platforms. Videos included:

- A hero video that aimed to get residents to think about big questions facing the future of Greater Christchurch with a call to action to fill out the survey.

- A flyover video detailing the proposed turn up and go service and the route it could take.
- Vox pop videos asking residents from Hornby, Rangiora and Central Christchurch questions about travel and the future of Greater Christchurch

In total, these videos received 408,091 views spread across each platform with Facebook receiving the most video views at 271,329 followed by TikTok at 130,367.

High levels of social media reach and engagement were achieved over the six weeks of the campaign. In total, these social channels had 1,298,999 impressions, 35,685 engagements and 9,314 link clicks. Facebook was the highest-performing platform with 1,109,551 impressions and 32,064 engagements. While the average engagement rate across Facebook posts of all kinds is 0.064%, Facebook engagement for Huihui Mai was 2.5%.

TikTok was effective at achieving high levels of youth engagement – a key focus of the campaign. Two sets of advertisements were run over the campaign with a total budget of $500 reaching an audience of 91,849 and achieving 2,883 likes. TikTok's key metric for engagement is 6-second video views - the two videos reached 17,396 6-second video views.

Activations

It was important to extend the visibility of the campaign beyond advertising and digital and have it be seen in our communities.

A series of activations across Greater Christchurch was centred around a large photo wall that asked a big question – "What should Greater Christchurch look like in 2050?" The photo wall and associated collateral appeared in many places over the campaign, including University of Canterbury and Lincoln University Clubs Days, Riverside, Ohoka and Lincoln Farmers Markets, Tūranga, Ruataniwha Kaiapoi Civic Centre and the Lincoln Events Centre.

Interactions with the public were extremely positive resulting in high awareness for the campaign and in-person support to fill out the survey.

Drop-ins, stakeholder workshops & webinar

As Huihui Mai is a region-wide campaign targeting all demographics we wanted the information and opportunities to ask questions to be accessible. It was important that residents had multiple opportunities to engage with subject matter experts about the campaign and give their feedback accordingly.

We hosted four drop-in information sessions and three stakeholder workshops across Greater Christchurch as well as one online webinar.

Engagement with harder-to-reach communities

From the outset it was important to reach traditionally harder to reach audiences, including Māori, Pacific and Asian communities.

We engaged directly with each of these communities, including relevant health and social service providers and through the Ministry of Education, all schools, early learning centres and Ministry staff, as well as the clubs associated with the key tertiary institutions, asking them to share the survey in their networks as well as make subject matter experts available to answer any questions they had. After we reached out directly to these communities, we saw a 7% increase in responses.

Our youth reach was particularly successful, resulting in very high levels of youth participation - 35% of survey respondents were under 35 years of age.

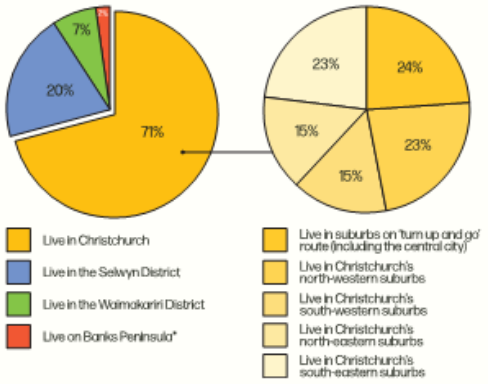
Who engaged with us

For us to be confident that we understood the different perspectives across our community, we needed to reach a wide range of residents from across Greater Christchurch.

Our main form of engagement was a simple-to-use online survey. The survey asked people to provide their feedback on some of the work to date, and their views about high-density housing, neighbourhoods, the environment and public transport. The survey meant we could capture the feedback of a lot of people and analyse it to understand where views might differ across our community.

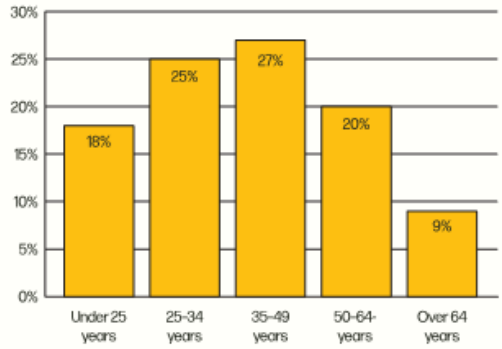
During the community engagement period from 23 February 2023 to 3 April 2023, 7,066 people completed the online survey. Information on those who undertook the survey is provided below.

Where did they live?



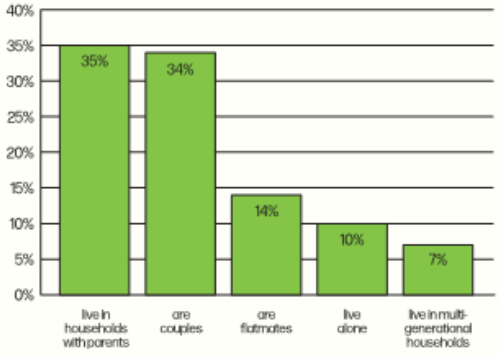
How old were they?

Of the 81% of people who answered this question:



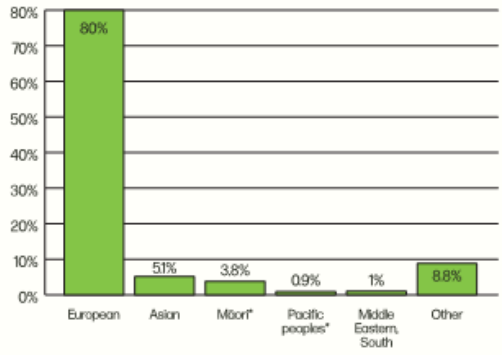
What types of households did they live in?

Of the 80% of people who answered this question:

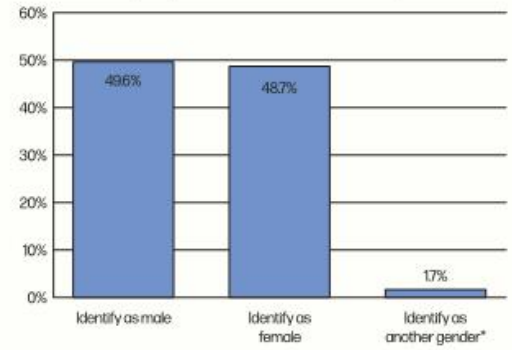


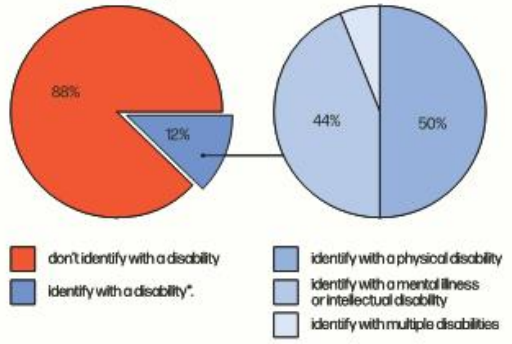
What did they identify as their primary ethnicity?

Of the 73% of people who answered this question:



How did they identify their gender?	How did they identify with regard to disability?
Of the 79% of people who answered this question:	Of the 79% of people who answered this question:





** For some demographic categories, the number of respondents were not sufficient to analyse their responses separately with respect to some questions. In general, demographic detail was not included where the number of respondents to that question was less than 100.*

What groups in our community are under-represented in the survey respondents?

1. People who identified Māori as their primary ethnic identity made up only 3.8% of the survey respondents but represent 6.2% of the Greater Christchurch population, while people who identified Pacifica as their primary ethnic identity made up only 0.9% of survey respondents but represent 2.% of the Greater Christchurch population (Census, 2018).
2. 24% of New Zealanders identify as having a disability 2013 (NZ Disability Survey) but only 12% of survey respondents identified that they have a disability.



What people said (structured around the key questions)

Question 1: Do you agree that we should focus growth around key urban and town centres and along public transport routes in the future?

Through the online survey people told us:

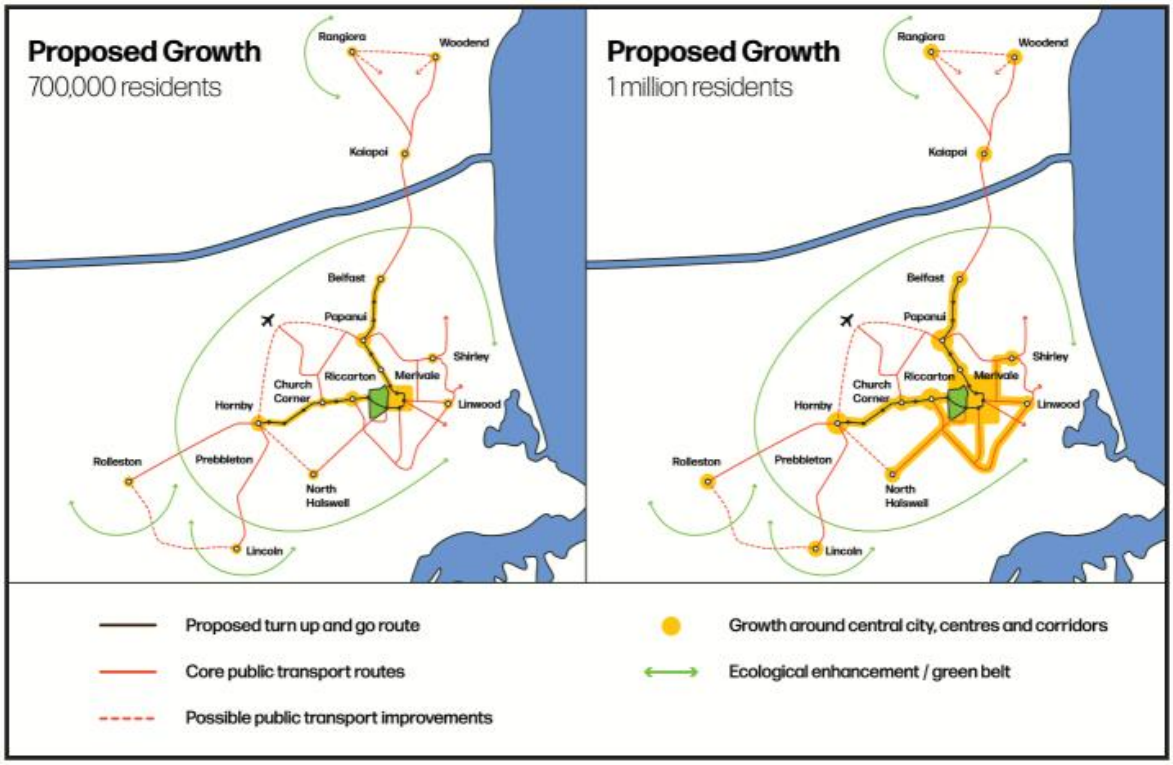
A significant majority of people (86%) agreed that we should focus growth around key urban and town centres and along public transport routes in the future.

Agreement was correlated with age - the younger people were, the more likely they were to agree.

People who identified as Māori were least likely to agree (74%) while people who identified as Asian were most likely to agree (92%).

There was very little difference by identified gender or household type, with the exception of flatmates, who were more positive.

People who identified as having a disability were less likely to agree (84%) than people who did not identify with a disability.



People living in suburbs along the suggested 'turn up and go' route (89%) and in western suburbs (88%) were more likely to agree while those in the districts were less likely to agree (83% in Selwyn and 81% in Waimakariri).

For the 6.9% of people who wanted growth accommodated in other ways:

- 38% want growth accommodated in other suburban areas of Christchurch
- 36% want growth accommodated in new sub-divisions on rural land adjacent to existing towns and suburbs
- 15% want growth accommodated in new towns in rural areas
- 11% want growth accommodated in other towns

Through the workshops, people told us:

Opportunities associated with the suggested pattern of growth:

- Improvement of public transportation to ensure sustainable and inclusive growth. Improving the frequency of services, enhancing connectivity, introducing park and ride options, and reducing the number of stops to ensure faster and more efficient journeys.
- Improvement of housing standards – address the challenges associated with accommodating an aging population and ensuring a varied typology of houses and units that cater to different needs. Need for well-designed smaller dwellings that are suitable for urban living. Importance of incorporating greenspace into high-quality intensification projects to ensure that the development is sustainable and provides a high quality of life for residents.
- Encouraging fewer cars within the city is closely linked to the idea of improving public transportation – to reduce emissions but also to reduce the cost of living for residents. Car-sharing not only in the city but also in the suburbs can be a cost-effective and sustainable solution that can provide residents with more options for transportation.
- Seizing the opportunity to invest in and construct the necessary infrastructure for future growth, starting now – allow for meticulous planning and strategic placement of infrastructure in areas earmarked for expansion. The infrastructure development should encompass not only three waters (water supply, wastewater, and stormwater) but also transport infrastructure.
- Integration of more greenspaces and large trees into any proposed developments to create a healthier and more attractive living environment for its residents. Additionally, such initiatives can promote biodiversity, improve air quality, and mitigate the impact of climate change.
- Selwyn workshop participants also identified availability of essential amenities in close proximity, such as medical centres, educational institutions, transportation services, businesses, and shops as crucial for accommodating the anticipated growth of Selwyn and ensuring the towns can attract more people and foster sustainable development.
- Waimakariri workshop participants also identified prioritised transport, particularly rail options and car sharing, along with the potential for a new airport at Rangiora. The group also believed that population growth presented opportunities for their community to become more self-sustainable in energy, food, and employment.

Challenges associated with the suggested pattern of growth:

- Environmental considerations when planning for growth – concerns about the loss of productive land, the de-greening of the region, risks associated with climate change, water quality, and pollution resulting from high-density living. They highlighted the need to find a balance between growth and preserving the environment and to ensure that any development is sustainable in the long term.
- Transport infrastructure – the importance of affordable and efficient public transportation that is well-connected to various facilities and efficiently linked between residential and work areas. Concern that proximity of the transportation network to residential areas could potentially cause congestion due to limited road space, and a need to find a balance between passenger and freight usage on any future rail system.

- The traditional "¼ acre dream" and "Kiwi way of life" mindset may no longer be sustainable in light of the increasing demand for housing. Need to carefully plan the type and location of housing developments to maintain the community's way of life, preserve cultural values and ensure that new housing is affordable and accessible to a diverse range of people.
- Preserving cultural values and lifestyles that define the area – if urban growth is not planned properly, it has the potential to restrict the current way of life by limiting the choices available. The challenge is to find a balance between growth and preserving cultural values and lifestyles, while ensuring that any new development benefits the community as a whole.
- Christchurch workshop participants identified environmental considerations as a top priority when planning for growth sustainably including potential loss of agricultural land, the de-greening of the city, pollution from high-density living, climate change, water quality, and the need to find a balance between passenger and freight usage on any future rail system. A major challenge identified was the lack of developer appetite for the type of development needed in the city. Participants also emphasised the need to find a balance between transportation options and their accessibility to various facilities, such as hospitals and schools.
- Selwyn workshop participants also identified the "Kiwi way of life" and owning a quarter-acre section were seen as defining cultural values and lifestyles that need to be preserved, while also accommodating growth and development. Participants highlighted the challenge of balancing growth with preserving the community's unique way of life, access to services, the lack of interest in high-rise or high-density housing and challenges associated with public transport reliability, speed and timeliness.
- Waimakariri workshop participants also expressed resistance towards the concept of 15-minute cities and potential loss of democratic processes, and a concern about loss of privacy and personal autonomy in the context of climate change response and population growth. The group also recognises the value of maintaining a sense of community identity and cohesion, even as Greater Christchurch grows.



Question 2: What do you think about high-density living (apartments, townhouses)?

Through the online survey people told us:

39% of people are open to living in high-density housing with a further 17% saying they might consider it in some situations.

Agreement was correlated with age – the younger people were, the more likely they were to be open to living in high-density housing.

People who identified as Asian are more likely to be open to high-density living (45%).

Those people who identified as male were likely to be open to high-density living (47%) compared to those who identified as female (32%).

There was very little difference by household type, with the exception of flatmates (63%), who were more likely to be open to living in high-density housing and parents with children who were less likely (34%).

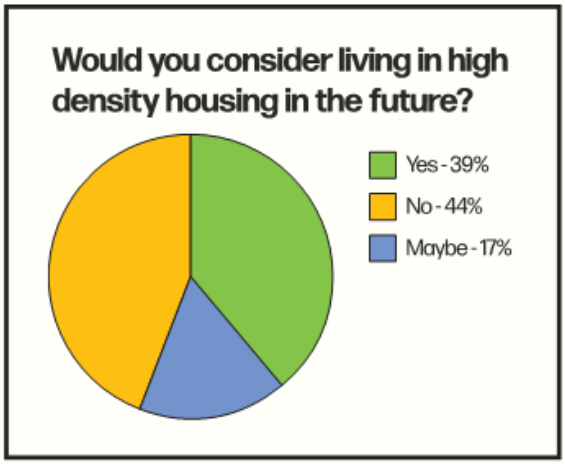
People living in suburbs along the suggested 'turn up and go' route (55%) and in north-west Christchurch (48%) were more likely to be open to high-density living while those in the districts were less likely to be open to high-density living (25% in Selwyn and 27% in Waimakariri).

For the 17% of people who said they might consider high-density living in the right circumstances, the most common considerations were (in order from most important to least):

1. Access to greenspace
2. Quality
3. Well-designed
4. Stage of life
5. Affordability
6. Transport options

Other considerations included location, nearby amenities, accessibility and noise. Issues of parking, pet friendly, safety, size, storage/garage, sense of community, privacy and sustainability were also mentioned.

Affordability was by far the most important consideration for people under 25 years of age. Accessibility and nearby amenities were important for people over 64 years of age. All ages identified greenspace in their top four considerations.



Affordability was also identified by those people living in suburbs on the 'turn up and go' route, in north-east Christchurch and in the Waimakariri District. Greenspace was in the top 3 in all areas except in the Waimakariri District. Quality and/or well-designed was identified by people living in all areas of Greater Christchurch while nearby amenities were only identified in the top 3 for people in Waimakariri.

Through the workshops, people told us:

Priorities for living well in higher-density housing are:

- *Access to open and greenspaces* including providing dog walking parks, sports / playgrounds / recreational areas, community gardens / allotments / fruit trees, walkways, and greenery. Participants also emphasised the importance of large greenspaces with established trees to enhance the liveability of high-density housing.
- *Access to public transport and walkable communities* – safe pedestrian environments, providing cycling facilities and storage options, and offsite transport options such as walking, cycling, car-share, and micro-mobility to achieve this.

- *Well-designed neighbourhoods and buildings* – soundproofing inside buildings to minimise noise transmission, aesthetically pleasing designs, clean, safe, and attractive housing, access to natural light and sunlight, and sufficient storage space for residents.
- *Need to cater to different groups of people when planning for future growth* – a variety of homes need to be provided to cater to extended family living, groups of young people, single people, older people, and small families.
- *Climate change solutions and reducing emissions* when planning for future growth and higher-density living – incorporating more wetlands, encouraging the use of solar power and other renewable energy sources, and promoting energy-efficient design in new buildings.
- *Community spaces that provide a sense of belonging and inclusivity* – spaces that allow people to come together and feel a sense of connection and support social cohesion, which could positively impact the overall well-being of the residents.
- *Privacy* – good landscaping, soundproofing, good design, and technology such as smart blinds or curtains could help maintain privacy while living in high-density housing.
- Waimakariri workshop participants also *expressed concerns about the concept of higher-density housing.* These individuals argued that there is ample land available and questioned the need for higher-density housing. They also suggested that high-density living is not conducive to living well, as it may lead to issues such as reduced privacy and lack of outdoor space and less social cohesion.



Question 3: What matters most about the type of neighbourhood you would like to live in, and what are you missing from your local area?

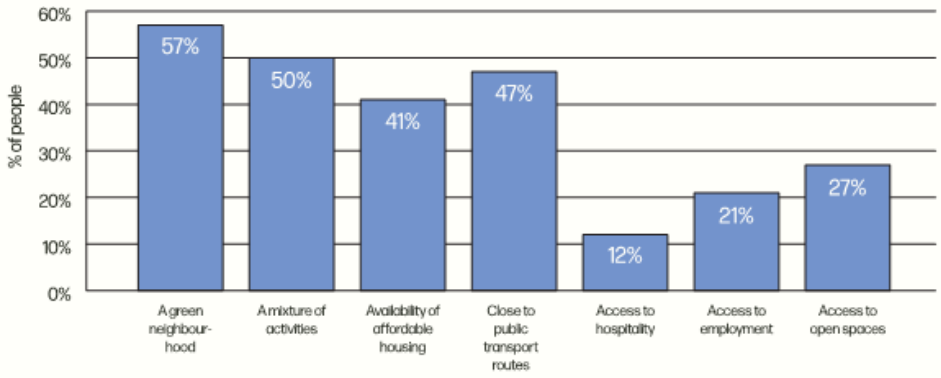
Through the online survey people told us:

The top four characteristics people most value in a neighbourhood are greenspaces, a mix of activity, proximity to public transport routes and availability of affordable housing.

What people valued was very consistent across all demographics with the following exceptions:

- Younger people, people who were flatting or living in multi-generational households, people whose primary ethnic identity is Pacifica and people who identify as having a disability were more likely to value affordable housing than other groups in the community.
- People whose primary ethnic identity is Middle Eastern, African or South American are more likely to value being close to public transport while people whose primary ethnic identity is Pacifica are less likely. People whose primary ethnic identity is Asian are less likely to value access to open spaces than other ethnicities.
- People who live in suburbs on the 'turn up and go' route value easy access to open spaces relatively less than people living elsewhere.

What matters most when thinking about the type of neighbourhood that you would like to live in?

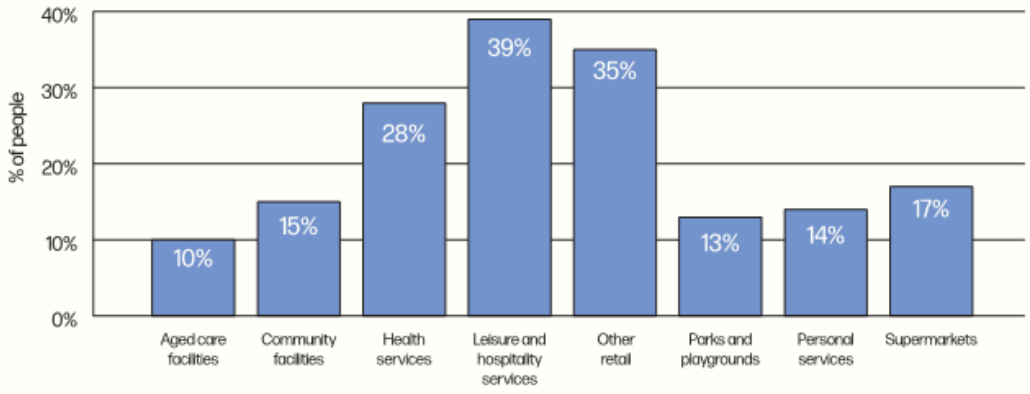


While one-third of people have everything they need, the most common gaps in local amenity were hospitality and entertainment services, other retail and health services.

Where people live has a significant impact on what gaps in services and amenities were identified.

- People in suburbs along the 'turn up and go' route were relatively more likely to say they had everything they needed while people in the Selwyn District were relatively less likely to say they have everything they need than people who live elsewhere.

What services, businesses or facilities are missing in your local area that are important to you?



- People in the Selwyn District were relatively more likely to identify aged care facilities, health services, and other retail than people living elsewhere. People in the Waimakariri District were also relatively more likely to identify health services than people living elsewhere and relatively less likely to identify supermarkets as a gap.
- People in south-west Christchurch were relatively more likely to identify supermarkets as a gap in their local area while people in north-east Christchurch were relatively more likely to identify leisure and hospitality services as a gap than people living elsewhere.

Whether people say they have everything they need in their local area is correlated with age, with people more likely to say they have everything they need increasing with age.

With regard to the gaps identified in local amenities and services, people over 64 years old were more likely to identify aged care facilities and relatively less likely to identify hospitality and entertainment services than people of other ages.

There were no other significant variances in types of local amenities or services identified as gaps by demographics such as how people identify their ethnicity, disability, gender or household type.

Other free text answers:

- "Better technology, such as free wifi around towns like Rolleston and Lincoln."
- "Availability of a variety of housing types (apartments, townhouses, large family dwellings, regular houses of different sizes AND designs)."
- "Spaces that are accessible for disabled people."
- "Safety for residents using public transport - good bus shelters, excellent lighting, some NZ Police patrolling of central bus exchange late at night and the availability of safe public transport after 11 pm for young people who often use clubs and bars after that time and want to use public transport to get home."
- "Public spaces for community sports."
- "Sustainability/adaptation for climate change."
- "Shared green spaces.

Question 4: Where should we focus the most effort to protect and enhance our natural environment as our population grows?

Through the online survey people told us:

More than two-thirds of people identified improving the health of waterways as a top priority for where we should focus our effort to protect and enhance our natural environment.

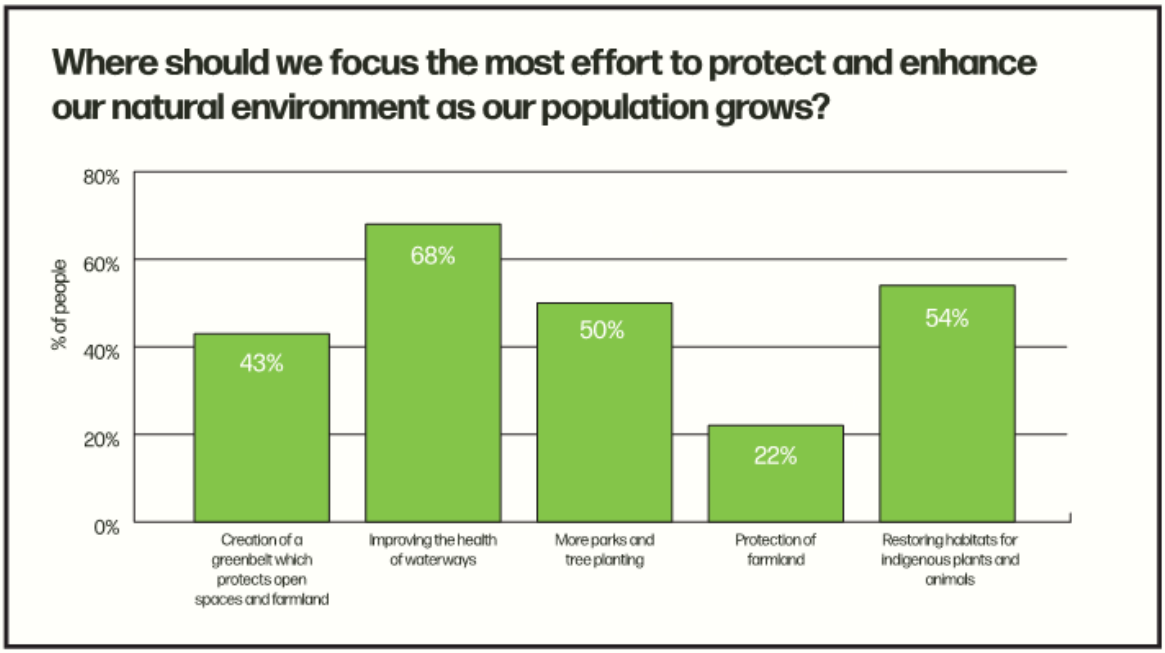
People in Selwyn prioritised protection of farmland relatively more highly than people living elsewhere. However, improving the health of waterways remained the top priority irrespective of where people lived.

People over 64 years prioritised restoration of habitats for indigenous plants and animals and more parks and tree planting relatively less than other age groups and prioritised protection of farmland more.

There was very little variation in environmental priority by how people identified their age, ethnicity, gender or whether they had a disability, or by their household type.

Other free text answers:

- "Stop the sprawl. Intensify development in towns don't enlarge them."
- "Re-establishing wetlands to provide flood mitigation and areas for indigenous plants and animals."
- "More inner-city greenbelts providing physical and psychological breaks."
- "Streets and roads are a huge area in the city and could be used to create ecological corridors for native plants and animals, as well as better managing stormwater and providing shade and amenity for people."
- "Utilising green spaces for community gardens or growing spaces for food i.e. fruit trees in parks, utilizing building rooftops for urban producers or making community space available for shared gardens - this could also incorporate teaching workshops to share knowledge on environmental care and producing food gardens."
- "Protecting existing wildlife habitat from degradation or disturbance. Examples might be not putting in walking tracks in existing important bird use areas."

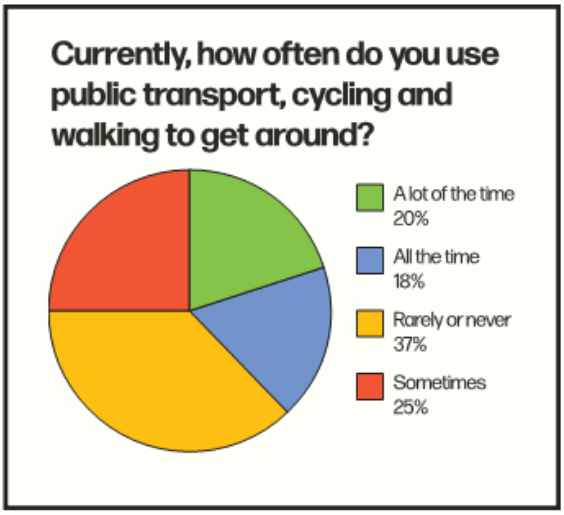


Question 5: How frequently do you use public transport, cycling and walking?

Through the online survey people told us:

38% of people use public and active (cycling and walking) modes of transport most or all of the time while 37% of people rarely or never use these modes of transport.

- Use of public and active modes of transport are highly correlated with age - 61% of people under 25 years use these modes most or all of the time compared with 23% of people over the age of 64 years.
- A higher proportion of people whose primary ethnic identity is Asian (46%) use public and active modes of transport most or all of the time.
- A higher proportion of people who identify as male (40%) use public and active modes most or all of the time compared with people who identify as female (35%).
- A higher proportion of people who identify as having a disability (43%) use public and active modes most or all of the time compared with those who don't identify as having a disability (37%).
- A higher proportion of people living as flatmates (56%) use public and active modes most or all of the time and a lower proportion of parent(s) with children (33%) than for the overall population.
- A higher proportion of people who live in suburbs along the 'turn up and go' route (55%), who live in the north-west (45% and south-east (46%) of Christchurch use public and active modes of transport most or all of the time. In Waimakariri (20%) and Selwyn (19%) a lower proportion of people use public and active modes of transport most or all of the time.



Question 6: What would encourage you to use public transport, cycling and walking more?

Through the online survey people told us:

The most common factors identified to encourage more public and active modes of transport were more direct public transport routes and a more frequent and reliable public transport service.

8% of people said they didn't need encouragement because they already used public and active modes of transport, while 7% said nothing would encourage them to use public and active modes.

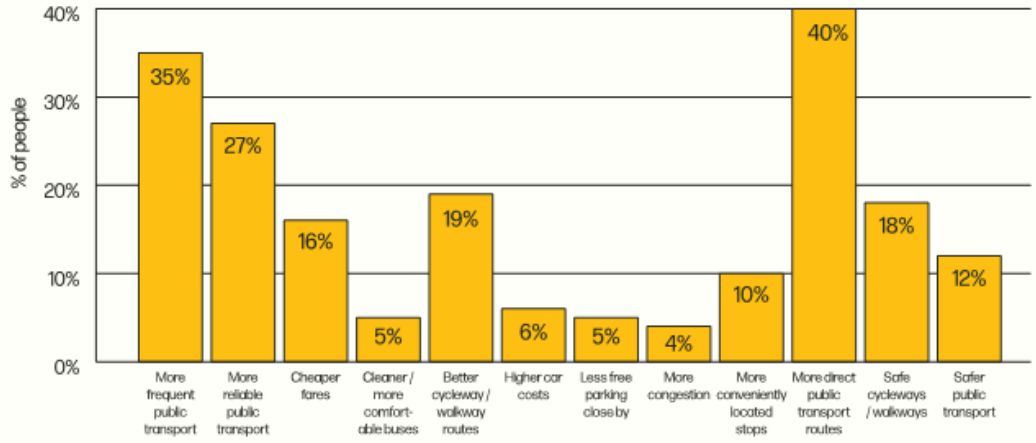
Of the remaining 85% of people where encouragement could make a difference, the most commonly identified characteristic related to improved public transport (more direct public transport routes, a more frequent public transport service and a more reliable public transport service).

The feedback was very consistent across other demographics with the only minor difference being that people whose primary ethnic identity is Māori are less interested in more frequent public transport and people whose primary ethnic identity is Pacifica are relatively less interested in more direct public transport routes than the respondents overall.

Other free text answers:

- "The travel time needs to be competitive with the car. Currently, it takes 15 mins to drive from Avonhead to City Centre. The bus takes approximately 30-40 mins. Until the time reduces anyone who values time will not take public transport."
- "Covered seated bus stops so during summer & winter you are protected from the weather. Waiting for the bus on hot or wet days with no cover or seating discourages using public transport."
- "Service at late and early hours especially during the weekend."
- "Bus lanes - especially if they're enforced - and if bus drivers use them."

What is most likely to encourage you to choose public transport, cycling and walking more often?



- "Shorter wait times for cycling at intersections."
- "More cycling lanes that are separated from the road by a curb (not just a painted line)."
- "More secure bike parking/locks for bikes and e-bikes."
- "Busses that don't stop so often (there are way too many bus stops in Christchurch and are located very close together, this makes the bus stop too often and lengthens travel times)."
- "Cycle ways that take priority over motorized transport. Often it is faster to bike on the road then use a dedicated cycle way as you get right of way at intersections. Currently motorized transport has all the rights."
- "Cheap and effective cycleways where grass verges are turned into walking / riding tracks to allow for more active spaces on the sides of roads rather than worthless grass strips. This needs to be nothing more than hard-packed light gravel..."

Through the workshops, people told us:

In Waimakariri and Selwyn districts, participants focused on what would make them use their cars less:

- Having a variety of options that are reliable, frequent, accessible, and affordable – including dedicated cycleways, frequent bus services, electric bikes subsidies, rail systems, car hire services, free parking at park'n rides, and more.
- Opinions varied when it comes to the idea of reducing car usage – some people believe there should always be a choice of cars as a means of transport and objected to any limitations on their options, others argued that finding alternatives that can provide comparable convenience and freedom of mobility is crucial to reducing car usage.
- Challenges to getting around without a car included difficulty in transporting bulky items, safety concerns, and the need for support from the Accident Compensation Corporation (ACC) to cover accidents that may occur while using bikes, scooters, or electric bikes.
- Selwyn workshop participants also highlighted the need for a more diverse range of shops within the town to provide more options for residents to support local businesses and reduce the need to travel to neighbouring towns.
- Suggestions and concerns raised demonstrate the need for comprehensive and inclusive solutions that take into account the unique needs and challenges of different groups of people when it comes to transportation.



Question 7: Do you agree with the suggested 'turn up and go' route?

Through the online survey people told us:

Overall, 53% of people agree with the suggested 'turn up and go' route with those remaining evenly split between those who don't agree (24%) and those who don't know (23%).

Agreement with the suggested 'turn up and go' route varies significantly by where people live – 72% of those who live in suburbs along the route and 62% of people who live in north-west Christchurch agree with the suggested route while only 38% of people from the Selwyn District and 44% of people from Waimakariri District agreeing. People who live in north-east Christchurch are also less likely to agree with the suggested route – with only 46% of people in agreement.

A higher proportion of people who are under 25 years, are flatting or whose primary ethnic identity is Asian agree with the suggested 'turn up and go' route than overall.

People whose primary ethnic identity is Māori or Pacifica or who identify as having a physical disability, who live alone or in households of parent(s) with children are slightly less supportive of the suggested 'turn up and go' route than overall.

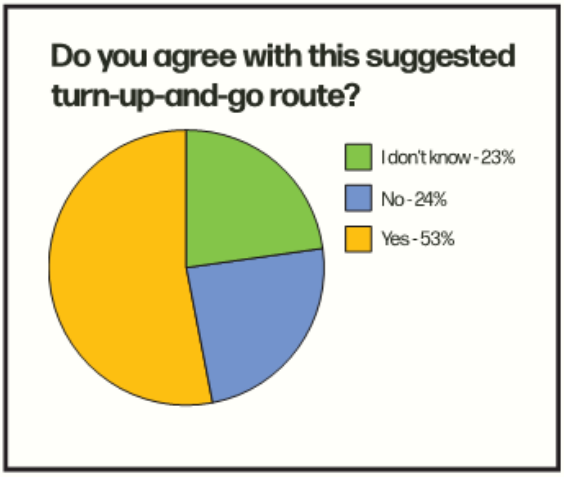
The 24% of people who did not agree with the suggested 'turn up and go' route identified the following alternative areas and centres:

- Rolleston (18%)
- Eastern Christchurch (15%)
- Greater Christchurch generally (15%)
- Rangiora (11%)
- South Christchurch (9%)

This was followed by north and west Christchurch (both at 6%), the airport and central Christchurch (both at 5%), south-east Christchurch, university, North Canterbury and Lyttelton. 3.2% of people wanted heavy rail corridors to be used.

As would be expected, the areas identified were highly correlated with where people lived. People who lived in suburbs along the 'turn up and go' route also identified Rolleston, Rangiora and eastern Christchurch.





These top three areas were consistently identified across all age groups with the exception of south Christchurch which was more commonly identified by people under 35 years old.

Other free text answers:

- "I just think that Russley would be a good area to also stop through. Not just because I live there but also because a lot of students live there and would make really good use of it. Not to mention the families and generally large amount of residencial properties."
- "It needs to extend to Rangiora and Rolleston. These are high growth areas. If there were rapid transport systems from these satellite towns into Christchurch, more people would opt for a MRT, and leave the car at home."
- "Out to Sumner/New Brighton, because during summer months, the traffic that heads out to Sumner is standstill, and the addition of a reliable turn up and go service would make this much more environmentally friendly, rather than everyone bringing an individual car etc. Thinking not just about where long term housing could spring up, but about where in Christchurch people like to go, (beach/Port Hills etc) and utilising the concept to service this appetite."

Through the workshops, people told us:

Opportunities of the 'turn up and go' route and service:

- Ensuring that the system is well-designed and developed from the outset – need for a holistic approach to planning, which takes into account the needs of all commuters, as well as the wider community.
- Potential to incorporate a rail network into the system – providing seamless connectivity across the wider Christchurch region.
- Potential of a 'turn up and go' system to support the development of high-density areas – the system can attract people to live and work in areas that are easily accessible through public transport. This could help reduce urban sprawl and car dependency, while also promoting sustainable and inclusive urban development.
- The 'turn up and go' system provides a sustainable and efficient alternative to using cars –helping reduce emissions and easing traffic congestion, noting that the current reliance on cars as the primary mode of transportation is not sustainable.
- Provision of secure parking facilities for both cars and bikes at the beginning and end of the system – to encourage more people to use the system and provide peace of mind, help reduce the number of cars on the road, while also improving the overall experience for commuters.
- Need to improve the overall experience for pedestrians – improvements in the pedestrian amenities at key centres such as Riccarton and Hornby, where commuters could easily transition from the system to their final destination, creating a safe and convenient pedestrian environment.

Challenges with the 'turn up and go' route and service:

- Need for bold political leadership and a city that is committed to making future investments in public transportation – investing in a 'turn up and go' system would require significant financial and political commitment, and there was concern that petty politics and concern about rate increases could prevent the investment from being seen as feasible. Therefore, the need for strong leadership and commitment from the city's decision-makers to push through with the suggested system.
- Potential traffic impacts and space constraints – narrow roads may not accommodate buses, cars, bikes, walkers, and trees, and challenges posed by one-way systems could also be a hindrance. Careful planning and design will be needed to ensure the system does not exacerbate traffic congestion and other transport-related problems.
- Suggested route does not include the southern, hills, eastern, and airport areas of Christchurch – suggested incorporating the airport, eastern Christchurch, and Colombo Street south.
- Importance of consulting with Rangiora and Rolleston in the planning process to ensure that those areas are also included in the development of public transportation infrastructure as well as actively engaging with a diverse range of stakeholders, such as disability rights groups, environmental advocates, and community organisations, planners can ensure that the system is designed to be equitable and accessible for everyone.

Question 8: What characteristics are most important to make the 'turn up and go' service attractive to use?

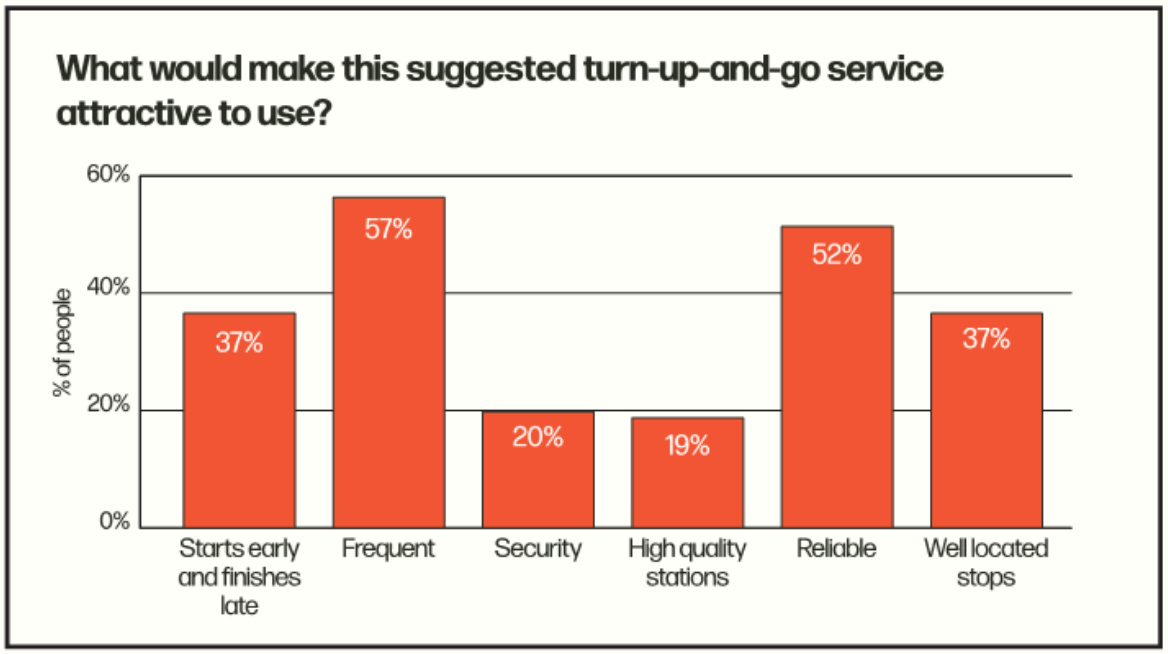
Through the online survey people told us:

Frequency and reliably were the two most commonly identified characteristics that would be important to make the 'turn up and go' service attractive to use.

There is very little difference in the relative importance of these characteristics by where people lived or their gender identity, primary ethnic identity, household type or whether they identify as having a disability. There is also very little difference by age except that a relatively lower proportion of people aged over 64 years of age identify 'starts early and finishes late' as important.

Other free text answers:

- "Quicker and separate from private transport - incentivise people by beating traffic."
- "Direct route to Hornby from Belfast. The traffic on John's Road south bound is increasing all the time."
- "Reliability and frequent services would be a given but it also needs to be safe for workers using in the inner city eg nurses and other hospital staff during night shifts."
- "I love this idea, please plan the design for future extensions as well so further down the timeline when we have gone it can be extended."
- "Safe connections to cycleways bike security amenities at main stations bike carrying facilities."
- "Decent connections to other key areas. I live in Shirley so this wouldn't directly benefit unless there was a quick way to get from there to the nearest stop. If bus routes stay the same it will only be of use to people living near the proposed route."
- "Ensuring it is much quicker and affordable compared to cars. It has to be more convenient to be a success."



Question 9: Where there may be limited road space along the 'turn and go' route, what road uses are most important?

Through the online survey people told us:

31% of people identified cycle-ways as an important road use where there is limited road space while 25% of people identified car lanes.

21% identified 'outdoor dining, greenspaces and street furniture' while 6% of people identified 'parking with limited pedestrian space'.

Younger people have a significantly higher preference for cycle-ways and pedestrian spaces and lower preference for car lanes while people over 50 years, and particularly those over 64 years are the opposite with a higher preference for car lanes and lower preference for cycleways and pedestrian areas. People over 64 years also have a higher preference for parking than other age groups.

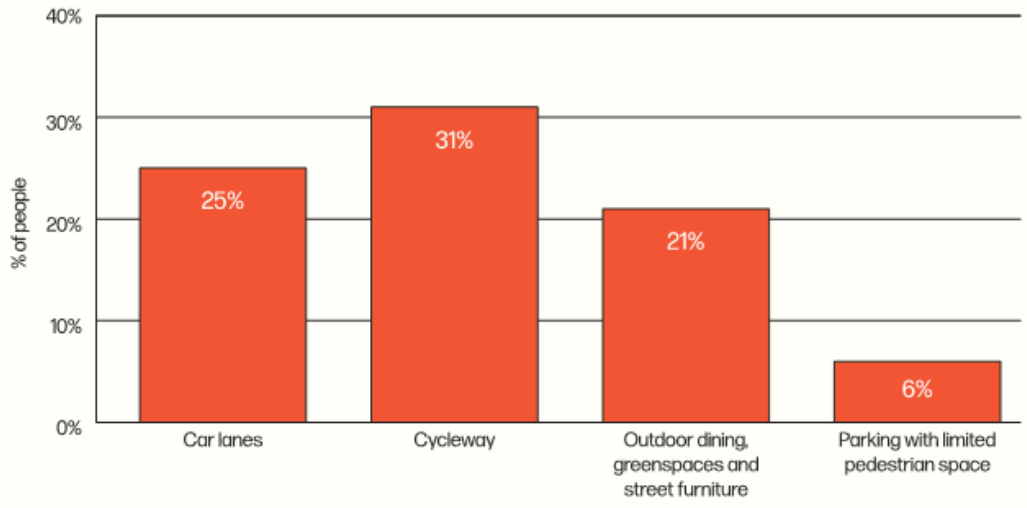
People whose primary ethnic identity is Asian have a higher preference for pedestrian spaces.

People who identify with a disability have a higher preference for pedestrian spaces and a lower preference for cycleways.

People who live alone have a higher preference for car lanes and a lower preference for pedestrian areas while people who are flatting have a higher preference for cycleways and pedestrian spaces. People living in multi-generational families have a lower preference for cycleways.

People who live north-west and north-east of Christchurch have a higher preference for cycleways. People who live in the districts have a significantly higher preference for car lanes and a lower preference for cycleways.

What would make this suggested turn-up-and-go service attractive to use?



Question 10: What would encourage people living in Selwyn and Waimakariri Districts to get to and from the central city using options other than by car?

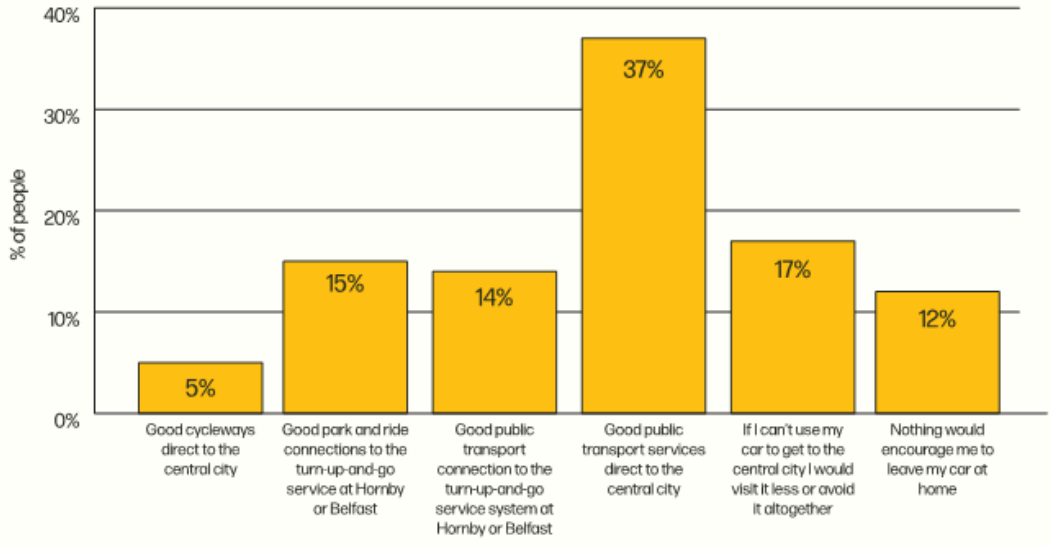
Through the online survey people told us:

Over one-third of people in Selwyn and Waimakariri Districts identified direct public transport to the central city as the best way to encourage people out of cars for travel to and from the central city.

As the number of respondents to this question is relatively small, analysis by demographic group is limited. Generally, there was very little difference by any demographic characteristics. The only conclusions that could be made of clear differences are:

- Openness to shift away from cars and toward public transport options decreases with age.
- People who identify as female have a preference for direct public transport routes over connecting with the 'turn up and go' service at Belfast or Hornby.

Selwyn and Waimakariri residents: What's the most important change that would encourage you to get to and from the central city using options other than by car?

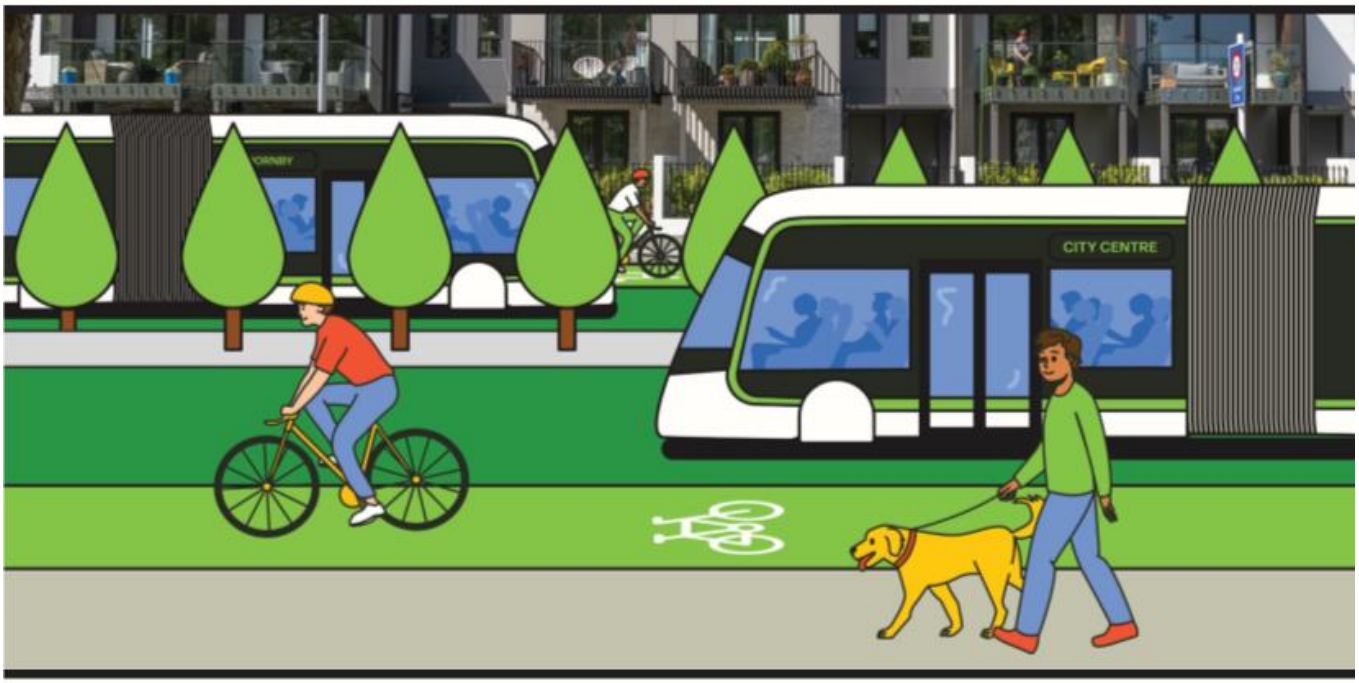


Future Function of Centres (workshop discussion)

Workshop participants were asked how urban centres along the proposed 'turn up and go' route and town centres might change as the population grows and what would be necessary for them to be great places to be and live.

Central City	A 'turn-up-and-go' service in Central City had the potential to reduce emissions and create a more sustainable environment, while also increasing business income and job opportunities. To ensure that Central City is a place where people want to spend their time, efficient and reliable transportation is crucial, and shuttles can be an effective option. Additionally, an information centre can help visitors navigate the city, while exciting events can draw people to the area. Security measures such as adequate lighting and law enforcement can promote a sense of security, and a variety of amenities and attractions that can cater to the diverse interests and needs of visitors.
Merivale	Participants believed that introducing a 'turn-up-and-go' service in Merivale could lead to a reduction in car reliance and more transportation options, making the suburb more modern and vibrant. However, careful consideration must be given to potential negative reactions, and diverse community needs should be met. Friendly and welcoming people, safe and secure environments, greenspaces, thriving businesses, and good urban design are all essential to attract residents and visitors. The 'turn-up-and-go' service can support these elements and increase accessibility and mobility in the area.
Riccarton	A 'turn up and go' service could bring about significant changes, including reducing traffic congestion, promoting more walking and cycling, and improving access to the University of Canterbury. To create a desirable environment, there is a need for attractive greenery in public places, better road layouts, sidewalks, and bike lanes, as well as developing more commercial and mixed-use spaces. Additionally, introducing carless days to promote sustainable transportation was suggested.
Church Corner	The introduction of a 'turn-up-and-go' service in Church Corner was also discussed, with participants noting that it could lead to increased congestion around schools and universities and road layout changes. However, by creating a welcoming and attractive environment, providing basic amenities, diverse shops and markets, safe pedestrian crossings, and maintaining the historic church, Church Corner could become an attractive place to spend time in relation to the new transport system.
Hornby	A 'turn-up-and-go' service in Hornby provided an opportunity to consolidate retail activities in one area, but there were concerns about increased traffic and parking if people from other areas used Hornby as a park 'n' ride. Hornby could become more people-centric, which could involve improving access for pedestrians, making it easier to transfer from buses to rapid transport, and providing more public and green spaces. Shifting the park'n ride to an additional station west of Hornby was also suggested to reduce traffic and parking and encourage public transport usage.

All towns	Concerns were raised about population growth leading to strain on existing resources, crime rates, and impacting on the environment. Importance of maintaining a sense of community and providing essential services such as healthcare, education, and employment opportunities.
Rolleston	Amenities such as cinemas and live music venues, mixed-use zoning, and preserving large mature trees are necessary to enhance the community's quality of life.
Rangiora	Maintaining the town's rural culture and character, providing practical skill-building opportunities for young people, and improving essential services such as medical facilities, education, and infrastructure.
Kaiapoi	Creating a diverse community with various facilities, good schools, employment opportunities, and embracing diversity through providing places of worship for different religions. The use of "red zones" for recreational bike trails, green spaces, and dog parks.
Pegasus, Woodend, and Ravenswood	Need for a balanced approach to growth that ensures the provision of essential services and facilities while maintaining the natural environment and sense of community. Factors such as adequate medical facilities, upkeep of beaches, bike and pedestrian safety, community facilities, and employment opportunities were highlighted as important.



What young people told us

We've heard from over 1,300 people (via online survey and workshops) who are under 25 years of age.

We ran tailored workshops for high school students at the following secondary schools: Haeata Community Campus, Papanui High School, Hornby High School, Christchurch Girls' High School, Ao Tawhiti, Avonside Girls' High, Christchurch Boys' High, Kaiapoi High School, and with other youth organisations including Ara, the University of Canterbury Students Association, VOYCE Whakarongo Mai (care experienced), Oxygen Youth Group, Puawai (Leadership Lab) Environment Canterbury Youth Rōpū, Pacific Youth Leadership and Transformation Council, Christchurch Youth Council, Waimakariri Youth Council, Selwyn Youth Council and Rerenga Awa- the Canterbury Youth Workers Collective.

A Youth Summit was held on 16 March where 35 young people and representatives of the youth sector heard the feedback from both the youth workshops and the wider public engagement and discussed this further. Students from St Andrews College, Darfield High School and Rolleston College also gave feedback.

A delegation of the Youth Summit presented the findings to the Committee briefing on 17 March.

Activations were held at university O'weeks (University of Canterbury and Lincoln University) – resulting in over 100 surveys completed by students.

The following themes were heard from the youth workshops engagement:

For housing:

Certain areas feel like they are not included in this plan - What business investment is going into the eastern areas like Aranui, New Brighton as well as those areas along Lincoln Road?

There needs to be an affordable, diverse and accessible range of housing options for different groups of people when planning for future growth - high-density housing does not suit indigenous/ big whānau who live in extended/intergenerational homes, whaikaha (disability) elderly, refugee and migrant, homeless and young people in care who may not have families and need transitional housing.

First-home buyers and youth wanting to flat with friends would be very open to high-density housing – this would need to be affordable and have good design around: sound, space, technology, landscaping and be aesthetically pleasing yet still maintain a sense of privacy and access to green spaces.

Climate change solutions and reducing emissions when planning for future growth and higher density are important - being conscious of rivers and beaches, water quality, flooding, how wetlands can be incorporated, considering renewable energy sources and energy-efficient design in new builds.

For the 'turn up and go' route:

The 'turn up and go' system needs to extend to Kaiapoi and Rolleston- there was strong feedback from young people in the Waimakariri and Selwyn districts, as this would allow greater access and connectivity for young people from these districts commuting into Christchurch city, as well as for people who live in the city to come out to the Greater Christchurch areas.

The whole system needs to be safe - many youth expressed how unsafe the current Bus Exchange is for them, so the 'turn up and go' needs to be safe when they are on the service and transitioning as pedestrians.

The 'turn up and go' needs to be accessible, frequent, free or very cheap and have free wi-fi.

The 'turn up and go' would support the development of high-density areas - youth could see the importance of access to places where people live, work and play could be further developed along this route. This would help reduce car dependency although traffic congestion in the surrounding areas is a grave concern.

Consideration and a clear communications plan needs to be given to those not close to the route - what connectivity support and considerations are there for those who live and work in areas in the East and other rural areas where the 'turn up and go' service does not extend to?

General feedback:

Safety: this can have different meanings for different groups of young people. Some examples of safety were freedom from: experiencing racism, being harassed on buses, being catcalled, social media harm, ram raids, alcohol harm and feeling fearful in public. Safety is also the freedom to: approach adults who are there to protect you, live in healthy cities, thrive and have the ability to dream.

Māoritanga is embraced, diverse, multicultural and welcoming: Māoritanga is embraced, visible, and valued across the city. Mana Whenua have a leadership role in anchor projects.

Every culture feels like they belong here and can see themselves reflected in the city design.

Equity: access to higher education and learning opportunities is important to earn higher income- how do we ensure young people from everywhere in the city have access to such opportunities? The high cost of living crisis is top of mind for young people- they want to buy a home in the future, but don't know if it is possible.

Clean, Green and Sustainable: Green spaces are a must, as is having good quality drinking water. Concerns include the water quality of the Avon River and dealing with rubbish and waste effectively.



PART 2:

Hearing from our urban development partners

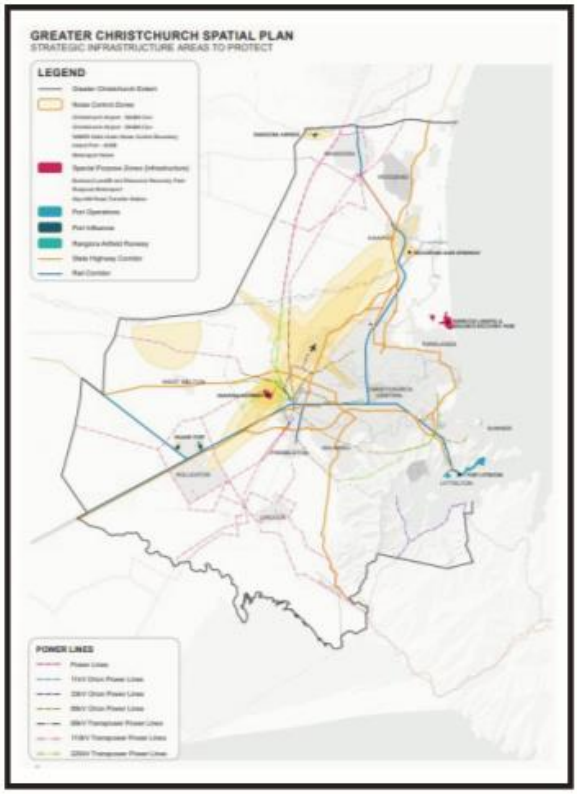


We held meetings with three types of 'urban development partners' which have a significant influence on the urban form of Greater Christchurch through their own decisions and investment:

1. Infrastructure providers
2. Developers and retirement villages
3. Businesses and tertiary institutions

The purpose of this engagement was to:

- Test the work to date to inform the development of the draft Greater Christchurch Spatial Plan and proposed 'turn up and go' route investigations.
- Identify how their strategies and plans intersect with the Spatial Plan and suggested 'turn up and go' route.



Infrastructure providers

Key themes from infrastructure providers

The importance of Greater Christchurch's logistics function:

- Protecting freight routes (rail and road) and regional connectivity
- Growth in inland ports to facilitate freight movement – need to provide for these

The impact of changing technology (including green energy, local energy solutions, digital technology, sensors, IoT) on the provision of network infrastructure (energy, telecommunications).

Growing and changing demand for energy:

- Greater demand for energy (transport, industrial, household).
- Intensification can shift the pattern of demand.
- Mixed-use development smooths energy demand.
- Potential for local renewable energy generation

Telecommunications:

- The continual challenge is finding locations to increase the density of the telecommunication networks to meet the demand generated by growth and development.
- Redevelopment and new growth areas across Greater Christchurch need to integrate network infrastructure including telecommunications with land use and the needs of communities.
- Spatial plans for sub-areas of Christchurch and new development proposals should be required to assess whether telecommunication infrastructure will meet future needs, especially in areas with no or limited connectivity capacity.

Tertiaries & Business

- Businesses need certainty and confidence about the future of Greater Christchurch and the plans and future investment by government.
- It is important to understand which businesses are affected by the transition and how to support them.
- Tertiaries will continue to provide face-to-face education alongside growing online education provision. Students and staff are not necessarily on site all the time.
- Public transport needs to work with flexible student schedules – currently it does not.
- Support high-density housing close to campus. However, many students study in Greater Christchurch for the wider regional lifestyle – they'll still want cars to access the outdoors.
- Campuses are reducing carbon / improving sustainability – esp. heating.

Importance of ongoing dialogue and working together to ensure ongoing alignment and integration. Follow-up meetings and workshops are being held with individual infrastructure providers and sectors (e.g. telecommunications).

Developers and retirement homes operators / developers

The purpose of engaging with developers and retirement home providers was to test the work to date and inform the development of the draft Greater Christchurch Spatial Plan and the suggested 'turn up and go' investigations, and to identify 'significant future development opportunities' as required by the National Policy Statement – Urban Development (NPS-UD). This engagement meets the requirements set out for a Future Development Strategy under the NPS-UD.

An email was sent to a long list of developers and retirement home providers inviting them to meet during the engagement period. It was noted that there is a further opportunity for feedback during the formal consultation on the draft Spatial Plan.

The engagement was structured around four questions:

1. What significant future development opportunities and infrastructure requirements that they see?
2. How are they seeing the market change in terms of the type of developments being delivered? What are the key drivers of this?
3. There is a focus on more targeted intensification. What are their thoughts on delivering more compact/ intensified developments in the long term? This could be framed as increased densities in 'greenfield' areas and intensification around public transport/Centres.
4. What would be the key factors/barriers to supporting this change? How can local and central government authorities encourage/support this?

Developers, landowners and other interested stakeholders were also invited to complete an online survey in late June/early July 2021. They responded to questions about their views on the demand and supply of land for residential and business development within the Greater Christchurch area, supply issues or barriers to development, and development intentions and possible timing for these. The feedback received has been used to inform the Greater Christchurch Spatial Plan. To supplement the online survey, and to provide further input to the spatial plan, face-to-face interviews were undertaken with a small number of developers. These delved further into understanding interviewees' experiences, aspirations and issues with land development matters.

The above has been supplemented by an understanding of the development opportunities and infrastructure requirements from other processes including –

- Feedback received on draft Intensification Planning Instruments prepared by Christchurch City, Selwyn and Waimakariri Districts and submissions on the notified plan change/ variations to implement Medium Density Residential Standards and the National Policy Statement on Urban Development;
- With consultation occurring either prior to or at the same time on Intensification Planning Instruments, there may have been some developers who did not contribute or participate on Huihui Mai.
- An understanding of rezoning requests through current district plan reviews and private plan change requests.
- Discussions with developers on the rezoning of land at a pre-lodgement stage;
- Ongoing communication with developers through consenting processes; and
- The planning of infrastructure by Councils, including the review of their plans to identify where upgrades are required in the future.

The key themes from developers and retirement home operators / developers

Development around public transport and MRT (turn up and go) corridors

General support for improved public transport and the 'turn up and go' route.

No clear indication on whether the suggested future 'turn up and go' route would provide sufficient certainty to encourage additional investment.

Spatial Plan looks to be driven by transport and not land use.

Housing development / greenfield

Concern if the Spatial Plan was used to limit density. Greenfield needs to be a housing choice, particularly in the districts.

New typologies and higher densities in towns will be feasible in the medium-long term, but may not be in the short-medium term.

The potential to undertake development at scale through greenfield allows for greater outcomes and flexibility than brownfield. Comprehensive redevelopment of industrial brownfield is much more attractive as it offers the scale of greenfield.

General support for spatial plans to indicate the direction of further greenfield expansion.

A larger number of developers are needed so that there is sufficient competition that can drive affordability.

Barriers and incentives to develop

Barriers to growth include development contributions, complex consenting, uncertainty, interpretation of groundwater and additional costs on development to meet amenity requirements e.g. tree canopy.

General agreement that the rezoning and consenting process is too slow, cumbersome, and drawn-out.

Due to NPS-UD Medium Density Residential Standards (MDRS), new tools and levers will be needed to incentivise brownfield redevelopment, infill, and intensification in appropriate locations.

Current regulations and requirements (e.g., net density definition) limit the ability of developers to provide positive outcomes that they would otherwise provide for.

General ambivalence to the green belt or disagreement on what the greenbelt should represent.

Importance of forward-thinking infrastructure to provide certainty for developers.

Opinions varied on the value of Special Housing Areas and Covid-19 Fast-Track Consenting.

Urban environments

Neighbourhood centres are important for local convenience. These should be part of greenfield developments.

The current move to smaller sections and street widths is becoming problematic for residents as they are still car-dependent because public transport isn't provided. People are parking on the road verges but only one car can get by.

Retirement and Lifestyle Village Developers/ Operators

The land requirement for a retirement or lifestyle village to be feasible is between 8-11 hectares. A non-greenfield growth agenda directly conflicts with this development model (especially for retirement villages). General concern about the implications of the National Policy Statement – Highly Productive Land.

There is a growing demand for this type of development which represents housing choice and a general trend observed of wanting to live closer to family since 2019. An aging population will increase demand.

Proximity to public transport is desirable for retirement villages as residents rely on more health services. The amenities of the surrounding area are highly important, as is connectivity.

Villages with hospital-level care are less concerned about co-locating to a hospital and/or other medical services.



Central government agencies and local authorities

Central government

As part of Huihui Mai relevant central government agencies were invited to engage and provide feedback on the future of Greater Christchurch. The approach varied by agency and included written briefings and meetings.

Overall, central government agencies were comfortable that the direction of the draft Spatial Plan and proposed 'turn up and go' mass transit service aligned with government priorities and investment in the region.

The Ministry of Housing and Urban Development, Kāinga Ora, Waka Kotahi and Department of Internal Affairs have been actively engaged in the preparation of the spatial plan through the Urban Growth Partnership and support the proposals.

Waitaha Public Service Commission group[1] was sent information with an offer of individual meetings. A short presentation was originally scheduled for the February meeting of the Waitaha group but was postponed due to the involvement of agencies with recovery after Cyclone Gabrielle. As a result of this engagement meetings where organised with the Ministry of Social Development, the Ministry of Education and the Ministry for Pacific Peoples.

The Ministry of Social Development was interested the future of eastern Christchurch and will engage further on this during the implementation phase.

The Ministry of Education would like to better understand the implications of the proposals on their networks and assets. This will be addressed through more active engagement in the implementation phase, with a focus on the priority areas.

Other agencies who received engagement material include: Department of Cabinet and the Prime Minister, Infrastructure Commission, KiwiRail, Ministry of Business, Innovation and Employment, Ministry of the Environment, Ministry of Transport, The Earthquake Commission, The Treasury, Ōtākaro Ltd.

Engagement with relevant central government agencies will continue through the implementation of the spatial plan.

Local government

We also engaged with our neighbouring local authorities at the Canterbury Mayoral Forum meeting on 24 May 2023.

Other groups

As part of the Huihui Mai consultation we also engaged with Christchurch City Council Multi-Cultural Advisory Group, One Voice - Te Reo Kotahi, Waimakariri Age Friendly Advisory Group and The Tuesday Club.

[1] *Members of the Waitaha Public Service Commission who received the briefing: Ara Poutama Aotearoa - Department of Corrections, Canterbury District Health Board Ministry of Business, Innovation and Employment, Ministry for Ethnic Communities, Ministry of Justice, Ministry for Pacific Peoples, Ministry of Social Development, NZ Police, Oranga Tamariki, Te Puni Kōkiri*

PART 3:

How this feedback has informed our spatial plan and MRT indicative business case

Key Themes from the Engagement	How this is considered in the draft Spatial Plan / Transport Plan / Mass Rapid Transit Indicative Business Case
1. The vast majority of people agree with the direction to focus growth around key urban and town centres and along public transport routes.	Consistent with the direction of the draft Spatial Plan.
2. Many people are open to high density living, but it needs to be planned and designed to meet their different needs and povide quality of life for people.	As key tools to deliver the Spatial Plan are developed - e.g. Priority Development Areas, Housing Plan - explicit consideration must be given to how to ensure that the development of high-density housing meets the holistic wellbeing and lifestyle needs of people.
3. People want effort focused on all aspects of the natural environment, with particular importance placed on improving the health of our waterways.	Inform the development and implementation of a Greater Christchurch blue-green network. This is a key move in the draft Spatial Plan.
4. Over half of people agree with the proposed 'turn up and go' route. Where they don't agree, it's mainly about wanting enhanced public transport / extension of the route where they live	This feedback will feed into the Indicative Business Case for MRT, and if approved, the development of the Detailed Business Case.
5. To use their cars less, people want more frequent, more reliable and more direct public transport.	Ensure public transport improvements are made across Greater Christchurch particularly with regard to frequency, reliability and direct routes. Consistent with the planned investment through PT Futures Investment Programme, and will inform the development of the Greater Christchurch Transport Plan.
6. Partnership and communication between urban development partners needs to improve to achieve better outcomes.	Included as a proposed action within the draft Spatial Plan joint work programme is to establish better models for partnering / communicating with urban development partners.
7. We need to protect Greater Christchurch's role as a national and regional logistics hub.	Explicitly addressed in the draft Spatial Plan and will be an important component of the Greater Christchurch Transport Plan.
8. There are some barriers and challenges to shift the balance of commercial residential development from greenfield to higher-density housing.	Review of statutory / non-statutory tools to shift the feasibility of development is proposed as an action within the draft Spatial Plan joint work programme.

References

Community engagement material
High-level engagement summary
Webinar recording
Webinar- questions and answers
Youth engagement summary
Youth summit summary
Community workshops summary



Appendix 1 – Online survey questions

1. **Do you agree that we should focus future growth around key urban and town centres and along public transport routes in the future?**

   Agree / Don't Agree / Don't Know

   a. If you don't think this is the best place to focus future growth, where do you think we should focus growth?

      In new sub-divisions on rural land adjacent to existing towns and suburbs *In new towns in rural areas*

      In other suburban areas of Christchurch *In other towns*

   b. List your reasons

2. **What matters most when thinking about the type of neighbourhood that you would like to live in?**

   A green neighbourhood (green spaces, trees)
   A mixture of activities (shops, services, cafes)
   Availability of affordable housing
   Easy access to open spaces – beach, hills, rivers
   Easy access to employment
   Easy access to bars, restaurants, entertainment
   Close to public transport routes`
   Other

   a. If other, please list

3. **Based on where you live, what services, businesses, or facilities are missing in your local area that are important to you?**

   Aged care facilities
   Community facilities – halls, libraries, schools
   Health services e.g. GPs, dentists, physios
   Leisure and hospitality services – bars, restaurants, movie theatres
   Other retail – clothing, hardware etc
   Parks and playgrounds
   Personal services – hairdressers, gyms
   Supermarket
   None – I have everything I need
   Other

   a. If other, please list

4. **Would you consider living in high density housing (such as a townhouse or apartments) in the future?**

   Yes / No / Maybe

   a. maybe, what would encourage you to live in high density housing? e.g if it was affordable, well designed, conveniently located.

5. **Where should we focus the most effort to protect and enhance our natural environment as our population grows?**

   Creation of a greenbelt which protects open spaces and farmland
   Improving the health of waterways
   More parks and tree planting
   Protection of farmland
   Restoring habitats for indigenous plants and animals
   Other

   a. If other, please list

6. **Currently, how often do you use public and/or active (cycling, walking) transport to get around?**

   A lot of the time
   All the time
   Rarely or never
   Sometimes

7. What is most likely to encourage you to choose public and active (cycling, walking) transport more often?

A more frequent public transport service	A more reliable public transport service
Cheaper fares	Cleaner and more comfortable buses
Higher car costs – fuel and parking	Cycle-ways and walkways that take me where I want to go
Less / no free parking close by	More congestion meaning trips take longer in your car
More conveniently located stops	More direct public transport routes and connections
Safer cycle-ways and walkways	Safer public transport – on bus and at stops
Other	Nothing would make me use public and active transport

I don't need encouragement, I always use public and active transport to get around

a. If other, please list

8. Do you agree with this suggested turn up and go route?

Agree / Don't Agree / Don't Know

a. If you don't agree, where do you think the route should go?

9. What would make this suggested a turn up and go service attractive to use?

A service that starts early and finishes late	Frequent
Good station and on-vehicle security	High quality stations - shelter, amenities
Reliable	Other

Well located stops that provide access to work, retail, leisure and health services

a. If other, please list

10. In prioritising a turn up and go public transport service, it will be necessary at key centres - for instance at Papanui, Merivale and Riccarton - to think about how we allocate space within the street for different users. In addition to a dedicated lane for the turn up and go transport service and a footpath, which of the following options is most important to you?

Car lanes	Outdoor dining, greenspaces and street furniture
Cycleway	Parking with limited pedestrian space

11. What's the most important change that would encourage you to get to and from the central city using options other than by car?

Good cycleways direct to the central city

Good park and ride connections to the turn up and go service at Hornby or Belfast

Good public transport connection to the turn up and go service system at Hornby or Belfast

Good public transport services direct to the central city

If I can't use my car to get to the central city I would visit it less or avoid it altogether

Nothing would encourage me to leave my car at home

Appendix 2 – List of feedback received via email and post

"While greenfield development seems like the simplest option to accommodate more people we must not overlook the downsides which are:

- the loss of prime agricultural land which ultimately distances the population from easy access to fresh fruits and vegetables while at the same time increasing food transportation costs.
- The constraint of or even the loss of waterways as in my neighbourhood, a small stream has been totally buried. This of course further eliminates wildlife from the urban environment.
- This urban spread makes greater numbers of people reliant on possessing their own automobiles and all the associated costs.

This American model has proved itself to be a failure and we should perhaps be looking to Singapore, And since we have lost so much prime agricultural land close to the city we should be looking to create vertical farms and a greener cityscape."

"The tram rail system works well in Tours, France. It's cheap, quiet, reliable and people use it.

People in outlying areas need cars, large 4x4 vehicles should be banned from city centres.

Electric cars are a non-starter, they take up space and the power supply is insufficient to service them.

I like the cycle ways, but feel they could be less generous in width, speaking as a cyclist.

The idea of allowing 6 storey housing is utter madness, have you forgotten Christchurch is on an earthquake fault."

"I guess consideration has been given for a monorail that can straddle some roads, and run beside the railway network to hook up at various stations in strategic places. As time moves forward, an electro-levitation type of transportation could be introduced as a means of quiet, fast and reliable system, which can be added to from outlying suburbs, like Rangiora, Rolleston, Lyttleton and beach suburbs."

"As a very interested of the population growth. You have given dates for workshops. I was totally unaware but looking at the Dates they have been. Straight away I smell a rat. Why was this not published in a timely manner?. Or could it be you had a preconceived idea on what you want and not really interested in other possible opinions. We have developed a culture if we speak it's hate speak. Or is racists. We are rather feed up with trying to keep us stifled."

"Just want to add that stopping at Hornby and Belfast, if they have gone that far they might as well go the rest in their car."

"We have seen the impact that transport has in Auckland.

The best cities internationally have this nailed so people can park their cars and hop on rail.

I believe urban sprawl can be different in Christchurch if we start investing in an infrastructure now that goes to Rolleston and has the potential to extend beyond and to Kaiapo and has the ability to go beyond.

I do believe we are at a place where this could be obtained more easily than the mess we see in Auckland but we need to work fast."

"If you check NZTA's survey data from before the earthquakes you will find the flow of traffic across the Waimak bridge each day went in six different directions with less than 20 per cent going to the central city

And it is probably even less now.

No train or bus service can take everybody everywhere they want to go as they all want to reach different places.

Public transport systems are practical in places like London, Japan, Hong Kong, and New York but we would need another 40 million people for them to work here."

Hello,

As another option may I suggest investigating a Tram-train style of PT for the Greater Chch area patterned after the 'Karlsruhe Model' in Germany, whereby tram / light rail vehicles run on existing heavy rail corridors and then switch on to street running rails closer into the city.

YouTube has a short clip of a basic operation: https://youtu.be/UhRnkEtzC-k

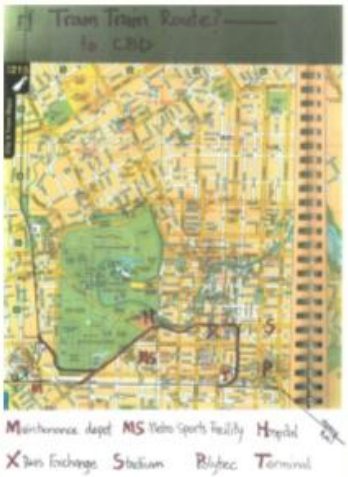
In Chch's situation an integrated approach is critical as not one method of PT will cover efficiently all that is desired for a total workable solution, however this TT option aligns more closely with what is trying to be achieved with 'Turn up and go' than the two other options investigated.

All these other options do not 'stack up' primarily because they target travel to and from the wider district into the city as opposed to travel within the city and should be recognised as two separate scenarios.

A heavy investment in equipment and infrastructure is being suggested for this project alone, but I believe a scaled back and more modest plan to reach the original goal can be still be achieved within a smaller budget.

As identified supporting and encouraging the region's future growth, a better PT system is needed to get to and from many locations. An overlapping Tram-train operation offers yet more choice and flexibility to a wider amount of patrons esp. having the advantage of bypassing congestion at peak times.

See map for a possible TT route into the CBD, skirting South Hagley Park and the Avon River enroute



"I listened to your presentation at lunchtime today. I intend to respond formally but the presentation raised some questions which I'd appreciate a response from you in the interim please:

- the material publicly available to date does not address how the current system of public transport will be accommodated/integrated with the proposed MRT. The phased introduction means that Phase 1 (in particular) will be on already heavily used PT corridors, in many instances replicating most or all of the proposed MRT route from suburban hubs to the centre city interchange. Much of the patronage that is carried on these corridors does not begin or end in the corridor however - it is collected from other parts of the city and funnelled into these corridors because they have on them, or are easily linked to, the places people want to visit (and vice versa). Therefore how do you see existing services being integrated with the proposed separate high frequency MRT service that stays just within the corridors?
- I understand the 'city shaping' desire of the proposal. To some extent that city shaping is already occurring with significant housing infill around Riccarton and within the vicinity of the Riccarton Rd corridor, and perhaps to a lesser extent in parts of Merivale to the city along the Papanui Rd/Victoria corridor. What evidence to you have to date that this densification is resulting in a greater propensity for people in these areas to use public transport? Obviously there are all kinds of barriers one could cite (including Covid in the last couple of years), but many of these barriers have been cited for years (if not decades) but seemingly not much has changed in terms of outcomes....patronage trends over the last few years (and prior to Covid) are not encouraging I think?
- What are the patronage expectations of the MRT in Phase1 and Phase 2? (and what is the analytical basis for these estimates?)."

"My feedback is to consider low-cost incremental experiments, rather than gambling billions on a risky moonshot.

Light rail is vastly expensive and completely inflexible.

Turn-up-and-go busses are flexible for route, and enable a gradual transition to upgrade todays public transport, with incremental investment corresponding to usage.

I lead an innovation team, and have learned the hard way about moonshot projects. Far better to run low-cost experiments, learn quickly (fail fast), change direction as needed to optimise outcomes."

"Written submission - key points:

- People like to use cars
- Create more carparks around perimeter of city
- No more bike lanes; pedestrian bridges to nowhere
- No more electric vehicles purchased by Christchurch City Council
- Don't increase rates to fund these activities / infrastructure. Put a cap on rates rises and stop wasting money. Christchurch City Council should stick to core functions. People on limited incomes can't afford rates.
- Don't encourage more growth
- Don't accept that rail line can't be used for commuters
- Christchurch City Council should focus on making us resilient to climate change not reduce climate emissions as we won't make a global impact
- Run tram around outside of Hagley park"

The Waimakariri Age-friendly Advisory Group received a verbal report from a member about a briefing meeting she attended on Tuesday 14 March on the work your group is undertaking as part of Greater Christchurch 2050.

The Age-friendly Advisory group was concerned that the report they received suggested that 'best practice' principles for Age-friendliness were not evident in either the presentation or the visual depictions that accompanied the presentation.

The Waimakariri Age-friendly Advisory Group understands that ongoing consultation is seeking feedback on a number of questions relating to future planning.

Our Age-friendly Advisory Group would welcome the opportunity to participate – perhaps you could attend one of our monthly meetings.

In the meantime we respectfully forward a check list developed by the World Health Organisation which outlines how plans and initiatives can meet 'best practice' for creating an age-friendly community.

We are forwarding this checklist as our initial feedback on the process and questions you are seeking engagement on. Our committee member who participated last Tuesday was concerned about proposals and visual depictions that minimise parking adjacent to businesses and services and potentially creating a barrier for elderly or physically disabled people.

Our local Age-friendly group would appreciate your commitment to this WHO checklist as you develop and refine your ideas.

Greater Christchurch Spatial Plan Hearings Panel Terms of Reference

Reporting to	Whakawhanake Kāinga Komiti
Membership	• An Independent Chair of the Hearings Panel • One representative from Environment Canterbury • One representative from Christchurch City Council • One representative from Selwyn District Council • One representative from Waimakariri District Council • One representative on behalf of Mana whenua • One Central Government representative The panel will have no provision for alternates
Quorum	A quorum shall consist of at least five Panel members including the Independent Chair.
Objective	To consider and make recommendations on the submissions received to the Draft Greater Christchurch Spatial Plan

Context

In 2022, an Urban Growth Partnership for Greater Christchurch was established – the Whakawhanake Kāinga Komiti. This partnership of central government, local government and mana whenua which is focused on advancing shared objectives related to affordable housing, emissions reduction, and creating liveable and resilient urban areas.

The first priority of the partnership is the development of the Greater Christchurch Spatial Plan. The purpose of the Greater Christchurch Spatial Plan is to:

- Set a desired urban form for a projected population of 700,000 (to 2051) and beyond that to 1 million people to ensure our urban form is future-proofed in the context of population growth and climate change.
- Deliver on the first priority of the Urban Growth Partnership for Greater Christchurch to develop a Spatial Plan to improve the coordination and alignment between central government, local government and mana whenua.
- Satisfy the requirements of the National Policy Statement on Urban Development for the Greater Christchurch Councils to jointly prepare a Future Development Strategy.

Scope of Activity

1. To consider all submissions received in respect of the Draft Greater Christchurch Spatial Plan, including oral and/or online presentations from submitters wishing to be heard
2. To receive an officers' report (being the collective advice from the partner staff) in response to the matters raised through submissions.
3. Following the consideration of submissions, hearing from submitters, and receiving of an officers' report the Panel will hold deliberations and make recommendations, in a written report, to the Whakawhanake Kāinga Komiti on responses to submissions and changes to the Draft Greater Christchurch Spatial Plan as a result of the public consultation process.
4. The Independent Chair shall run the hearings, managing submitter presentation time, questions from the Panel and any procedural matters or communications.

Power to Act

1. Adopt and provide to submitters, appropriate procedures for hearing submissions and undertaking deliberations, including but not limited to determining appropriate:
   a. Locations for the Panel to hear from submitters
   b. Timings allocated to submitters wishing to be heard
   c. Any grouping of submissions to assist consideration by the Panel.
2. To conduct meetings for the purpose of hearing and considering submissions made on the Draft Greater Christchurch Spatial Plan.
3. Following the consideration of submissions, hearing from submitters, and receiving of an officers' report, the Panel will hold deliberations and make recommendations to the Greater

   Christchurch Partnership Committee in a written report on responses to submissions and changes to the Draft Greater Christchurch Spatial Plan as a result of the public consultation process.
4. The panel may seek legal advice from the Partnership's legal counsel as necessary to assist deliberations and enable it to make recommendations.
5. In the event that considerations on any particular submission or issues are not unanimous then the majority view of the panel shall be reflected as the Panel's recommendation. However, the dissenting view shall also be outlined in the recommendation report.

Power to Recommend

1. To make recommendations to the Whakawhanake Kāinga Komiti on responses to submissions and changes to the Draft Greater Christchurch Spatial Plan as a result of the public consultation process.

Discharge

1. The Greater Christchurch Spatial Plan Hearings Panel will be discharged at the point the final Greater Christchurch Spatial Plan is adopted by the Whakawhanake Kāinga Komiti Partners.

Hearing Panel administrative support

The Panel will be provided administrative and logistical support as appropriate in order to fulfil its function and terms of reference. Where this is not able to be provided by partner staff, external temporary resourcing will be provided.



GREATER CHRISTCHURCH PT FUTURES MASS RAPID TRANSIT (MRT) INDICATIVE BUSINESS CASE

FINAL DRAFT

aurecon Boffa Miskell QTP Quality Transport Planning wsp

PT Futures Mass Rapid Transit Indicative Business Case

DRAFT Indicative Business Case

Waka Kotahi NZ Transport Agency

REV	DATE	DETAILS	AUTHOR	REVIEWER	APPROVER
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	NAME	SIGNATURE
Prepared by:		
Reviewed by:		
Approved by:		

This report ('Report') has been prepared by WSP exclusively for Waka Kotahi NZ Transport Agency ('Client') in relation to the PT Futures Mass Rapid Transit Indicative Business Case ('Purpose') and in accordance with contract number 2052C dated 05 August 2022. The findings in this Report are based on and are subject to the assumptions specified in the Report. WSP accepts no liability whatsoever for any reliance on or use of this Report, in whole or in part, for any use or purpose other than the Purpose or any use or reliance on the Report by any third party.

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GLOSSARY OF TERMS

Acronym	Term
BRT	Bus Rapid Transit
CCC	Christchurch City Council
CDHB	Canterbury District Health Board
CEDS	Christchurch Economic Development Strategy 2017
CEMP	Construction Environmental Management Plan
CERA	Canterbury Earthquake Recovery Authority
Core routes	Blue Line, Orange Line, Purple Line, Yellow Line and The Orbiter
CPTP	Canterbury Public Transport Plan 2018-2028
CRLTP	Canterbury Regional Land Transport Plan 2015-2025
CRPS	Canterbury Regional Policy Statement 2013
CRPTP	Canterbury Regional Public Transport Plan 2018-2028
DBC	Detailed Business Case
GCTS	Greater Christchurch Transport Statement 2012
GPS	Government Policy Statement on Land Transport
hh/ha	Households per hectare
IBC	Indicative Business Case
ILM	Investment Logic Map
IMD	Index of Multiple Deprivation
KAC	Key Activity Centre
KPI	Key Performance Indicator
LTMA	Land Transport Management Act 2003
LRT	Light Rail Transit
LTP	Long-Term Plan
LURP	Land Use Recovery Plan 2013

Acronym	Term
MaaS	Mobility-as-a-Service
MCA	Multi-Criteria Analysis
MCR	Major Cycle Route
MRT	Mass Rapid Transit
NLTF	National Land Transport Fund
NPS – UD	Draft National Policy Statement on Urban Development
NOR	Notice of Requirement
Waka Kotahi	Waka Kotahi New Zealand Transport Agency
Our Space	Our Space 2018-2048: Greater Christchurch Settlement Pattern Update
PBC	Programme Business Case
Project Team	WSP New Zealand Limited, Aurecon New Zealand Limited, QTP Limited and Boffa Miskell Limited
PT	Public transport
PTI	Planning Time Index
SDC	Selwyn District Council
SH	State Highway
SMART	Specific, Measurable, Agreed upon, Realistic and Time-related
SOI	Statement of Intent 2018-2022
SOV	Single occupancy vehicle
SSBC	Single-Stage Business Case
TRoNT	Te Rūnanga o Ngāi Tahu
TDM	Travel Demand Management
UDS	Greater Christchurch Urban Development Strategy
WDC	Waimakariri District Council


EXECUTIVE SUMMARY
WSP | Aurecon | Boffa Miskell |QTP

Christchurch has a significant opportunity to shape its future by investing into a Mass Rapid Transit (MRT) system. This Indicative Business Case demonstrates that best returns will come from a 22km city corridor from Hornby to Belfast, connected to the Waimakariri and Selwyn districts through the high frequency direct bus services funded by PT Futures.

Investing initially between $3.0b and $4.0b in this MRT solution, and funding its operation by $64m p.a., will return benefits worth up to 2.8 times the costs to Greater Christchurch.

MRT will improve people's access to the central city and their wellbeing by reducing the effect of congestion and reducing carbon emissions. By 2051 MRT will stimulate intensification, enabling the addition of 15,000 households and 54,000 jobs along the MRT corridor. MRT ridership is estimated at 39,000 people per day. This increases public transport patronage by 5.7 million trips per year, resulting in a total of 11 million passengers across the public transport system per year.

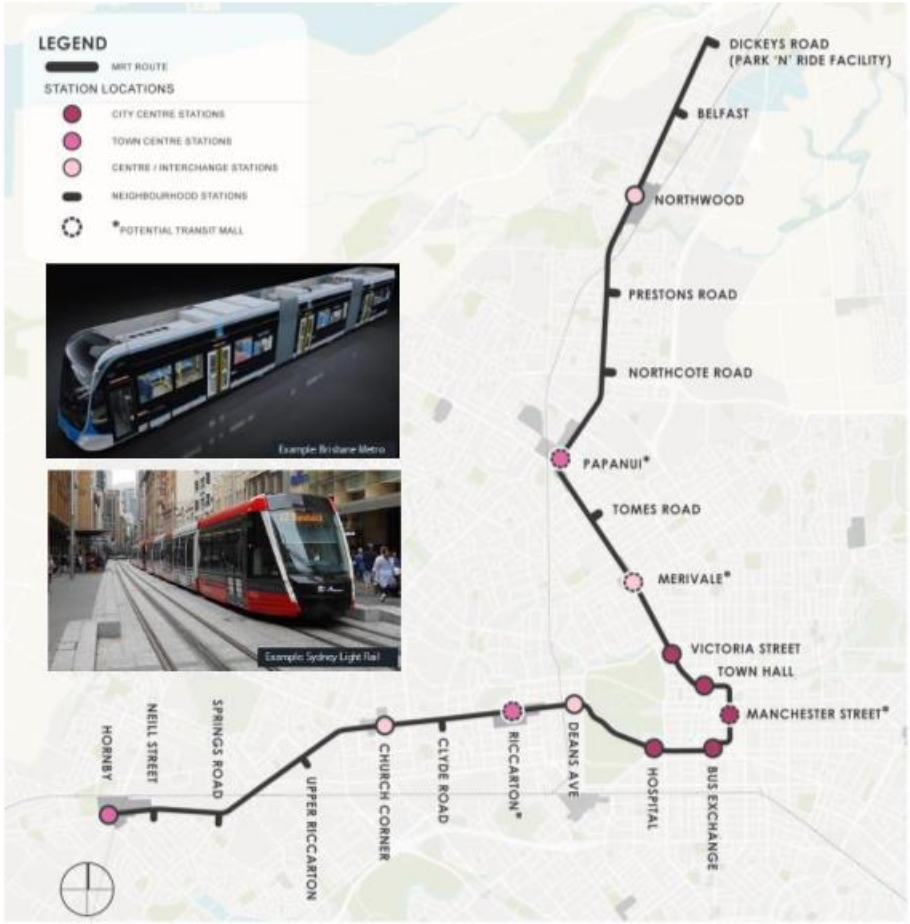
This opportunity requires further study through a Detailed Business Case to start in 2023, allowing construction to start in 2028 and services to operate by 2033, maximising the city shaping opportunities and benefits of MRT.

INTRODUCTION

Christchurch is currently being presented with a significant opportunity to make a 'step change' in how it plans and develops for its future. Its rapid growth combined with the damaging impact the 2010 and 2011 earthquakes have had on urban development is resulting in unsustainable development patterns for the city.

Without intervention it is likely development will result in a reduction in quality of life, disproportionate impacts on disadvantaged communities, constraints to economic growth and reduced ability to meet climate change commitments.

To address this Christchurch is planning to create quality compact and attractive urban places where people have less reliance on private vehicles and where a wider range of activities (social and economic) can be found close to where they live. This will build stronger, healthier communities, with greater vitality and economic prosperity. **High-capacity good quality public transport is a key enabler of this planned urban development.**



Manawhenua

Mahaanui Kurataiao Limited has prepared a report (March 2023) that sets outs the interests in, and position of, manawhenua on the route options.

In summary, the report advises that manawhenua support the transport objectives to reduce transport emissions and improve public transport. Manawhenua are supportive of the preferred MRT route within the City and the concept of an enhanced public transport service to Rolleston and to Rangiora, although it is noted that no priority has been identified for public transport to connect with or support Tuahiwi Marae or MR873.

Fundamental opposition is however articulated to any form of public transport service that involves the need to widen the Woodend-Rangiora Road, risking the loss of Māori Land and reducing accessibility between MR873 and the wider transport network. There is also the potential for a MRT route linking Woodend and Rangiora to become a catalyst for further urban development along this part of the corridor. This would have the consequential effect of expanding urban development over wāhi tapu and encroaching upon ngā wai in the Woodend/Ravenswood locality.

Whakawhanake Kāinga Komiti (WKK) The Whakawhanake Kāinga Komiti (WKK) is replacing the Greater Christchurch Partnership Committee (GCPC) project sponsor role. Both committees have acknowledged the significant opportunity for the Region by endorsing the PT Futures Programme of works which seeks to proactively respond to the need for a Public Transport System with significantly increased patronage and mode share that:

- delivers high-frequency PT options to existing Key Activity Centres and planned growth areas.
- provides reliable services with journey times that are competitive with private vehicles.
- is attractive and safe to use for customers.
- takes people where they want to go, when they want to get there; and
- provides a catalyst for desired land use development.

Public Transport Programme

The PT Futures Programme involves the development of two business cases that together explore an investment programme aimed at increasing the mode share of the public transport network in Greater Christchurch.

- The first business case delivered in 2018 (Greater Christchurch Public Transport Combined Business Case) recommended a programme of improvements to increase the uptake of public transport over the next decade.
- The second business case has a longer-term focus and considers the future role of mass rapid transit (MRT) in Greater Christchurch. Rapid transit is different from conventional public transport, being a quick, frequent, reliable and high-capacity public transport service that operates on a permanent route (road or rail) that is largely separated from other traffic.

Work commenced on the MRT business case in 2020 with the development of a Strategic Case and then an Interim Report that proposed three possible routes for MRT. The Interim Report was presented to the GCPC and they supported progression of the project through the IBC process, in collaboration with development of Christchurch Greater Spatial Plan.



Indicative Business Case for Mass Rapid Transit

This report presents the Indicative Business Case (IBC) for Public Transport Futures Mass Rapid Transit (MRT). This IBC:

- Sets out the case for investment in rapid transit along the corridor to enable sustainable growth for the city as outlined in the Greater Christchurch Spatial Plan.
- Assesses a range of route options, including sub assessments on urban realm and land use, station stops and mode technology to recommend a preferred rapid transit solution, its costs, and benefits.
- Discusses how the Project can be delivered – including Governance structures to ensure strong partnerships:
  - The obligations of partnership, protection, and participation under Te Tiriti o Waitangi.
  - Partner agencies including the Greater Christchurch Partnership (GCP) Committee and the newly formed Whakawhanake Kāinga Komiti (WKK) urban growth partnership.
- Determines timing and methodology for MRT implementation – as part of a wider strategy to enable the city's development and regeneration.

Strategic Context

The development of the MRT Business case is co-sponsored by Waka Kotahi, ECAN, WDC, CCC and SDC. Its development is, therefore, under the overarching strategic direction of the Canterbury Regional Land Transport Plan (CRLTP) 2015-2025 and Canterbury Public Transport Plan (CPTP) 2018-2028, with strong links to the GPS 2021 and National Policy Statement on Urban Development It has also been developed in collaboration with the emerging Greater Christchurch Spatial Plan being prepared by the GCP and proposed Plan Change 14 prepared by CCC.

CONTEXT

Over the next 30 years, the Greater Christchurch population will exceed 700,000 people. This growth will inevitably increase travel demand in Greater Christchurch. from 2021 to 2051, the forecasted daily trips on the Greater Christchurch network are anticipated to increase by 32%.

Without intervention it is expected the majority (95%) of these trips will be by private vehicles with low occupancy.

Why now?

The time to further progress the development of MRT for Greater Christchurch is now, because:

- PT Futures programme of bus improvements has already been endorsed, with intentions to accelerate delivery. If this is not considered, along with various other projects proposed in the local and regional plans, in context of MRT then the opportunities for synergies will be diminished.
- MRT is a city shaping project, which if planned and delivered ahead of the growth can better influence how we grow as opposed to reacting to it. Current low densities across greater Christchurch provide an opportunity now to proactively manage and catalyse intensification enabled by MRT.
- Implementation of retrofitting a major infrastructure project such as MRT will become more complex, more expensive, and more disruptive, the longer we wait.
- Immediate progression will ensure the momentum currently underway, including the intellectual property and governance structures already in place, can continue.

THE PROBLEMS AND OBJECTIVES

The problems MRT is addressing

The strategic case identifies three overarching problems statements which an investment in rapid transit will address:

Problem 1: Current and forecast residential and business settlement patterns perpetuate high car dependence with more people expected to drive long distances, resulting in increased transport costs to users and the wider community, and a continuation of the low mode share for Public Transport.

Problem 2: The PT system is not sufficiently attractive (in terms of travel time, reliability, convenience, comfort and cost) to encourage its use in preference to private vehicles, resulting in a continuation of the low mode share for PT and higher congestion, which will constrain access to the central city and other key destinations, increase public and private transport costs and restrict economic growth.

Problem 3: As Greater Christchurch grows, a continuation of the current transport system is not sustainable and fails our climate change mitigation and adaption responsibilities. Higher vehicle use will result in higher levels of embedded carbon, higher greenhouse gas and particulate emissions, and poorer public health outcomes.

The benefits of addressing the problem

The strategic case identifies three Investment Objectives that articulate the desired outcomes of MRT investment:

Investment Objective 1: Increased proportion of the population within key prioritised locations and along identified transport corridors within Greater Christchurch with improved access to Christchurch's Central City by 2051.

The main aim of this objective is for rapid transit to shape the urban form and growth. It should support the redevelopment to higher densities through allowing locations to have better access to employment, education and social opportunities and become more attractive places to live. This in turn increases land values and makes higher intensity developments feasible.

Investment Objective 2: Improved journey time and reliability of PT services relative to private vehicles within Greater Christchurch by 2051.

Reducing the impact of congestion on people's lives is a key component of improving accessibility and overall wellbeing. Mass rapid transit operates on dedicated corridors, so provides a fast and highly reliable travel option (as illustrated in the following MRT journey time map) even when other parts of the transport network are under strain and highly congested.



Investment Objective 3: Reduce emissions from transport movements across Greater Christchurch by 2051.

As a consequence of mode shift to public transport, Greater Christchurch will be able to further contribute to reducing its carbon footprint and greenhouse gas emissions. With less people using cars and more taking advantage of efficient rapid transit, positive environmental outcomes and climate change impacts will be achieved. In addition, intensification itself leads to less need for extensive travel.



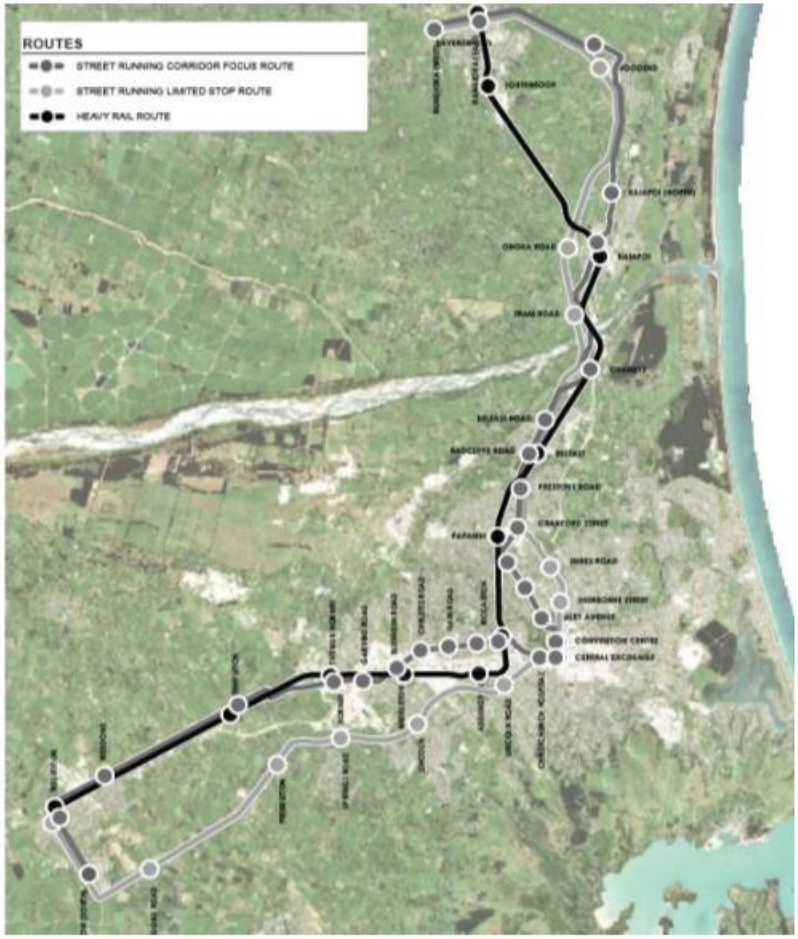
OPTION DEVELOPMENT AND ANALYSIS

To identify which form of rapid transit would best meet the desired outcomes, a range of options were assessed. The options were developed in stages to consider route alignment, urban realm and land use, station stops and mode technology.

A summary of the methodology and steps followed to assess the options is shown in the figure on the following page and outlined below

Initial Stage – Interim Report: Defined two MRT corridors, north and southwest, and explored three MRT scenarios within these:

- **Scenario 1:** A heavy rail scenario – with limited stop opportunities but competitive travel times.
- **Scenario 2:** A street running scenario with limited stops focused on competitive travel times that generally follows the motorway.
- **Scenario 3:** A street running scenario (corridor focused generally following arterial corridors).

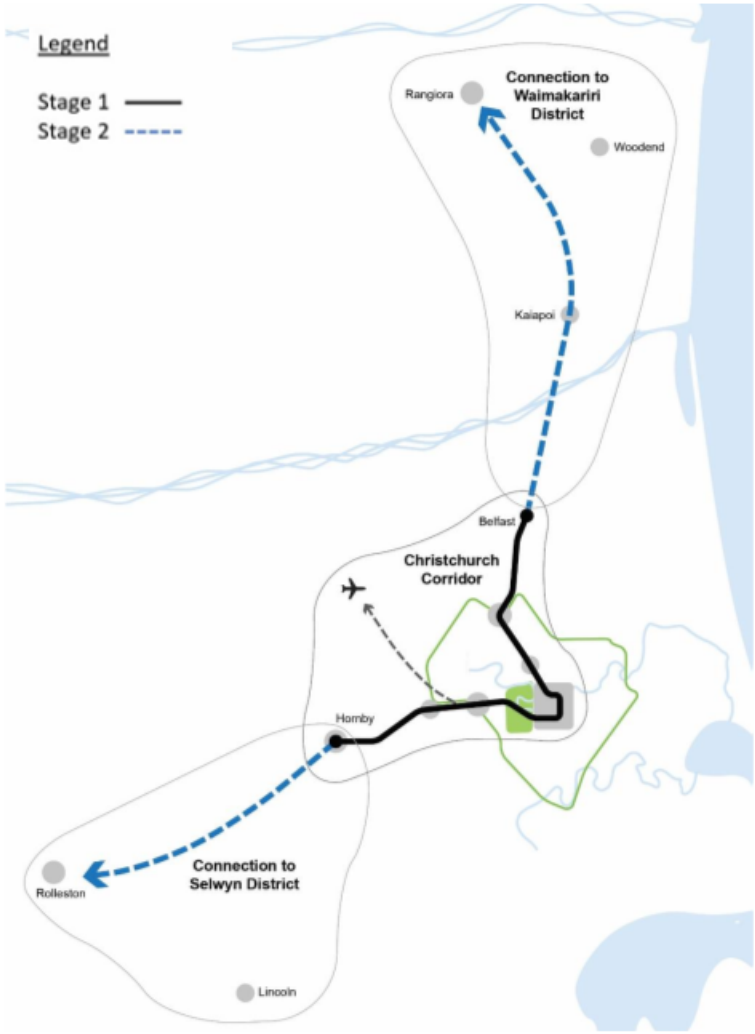


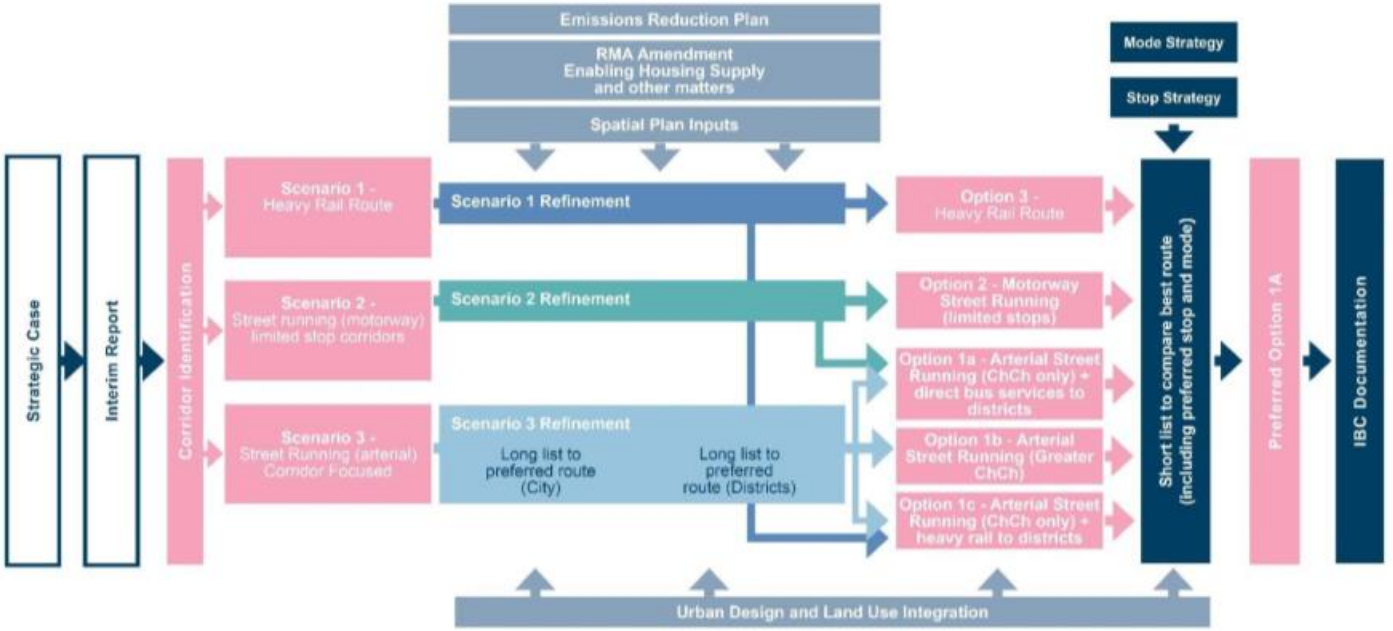
MRT Urban Design and Land Use Integration Assessment: Considered future land use integration opportunities for MRT related to relevant policy, strategic direction and the GCS and the built environment outcomes anticipated to support MRTP.

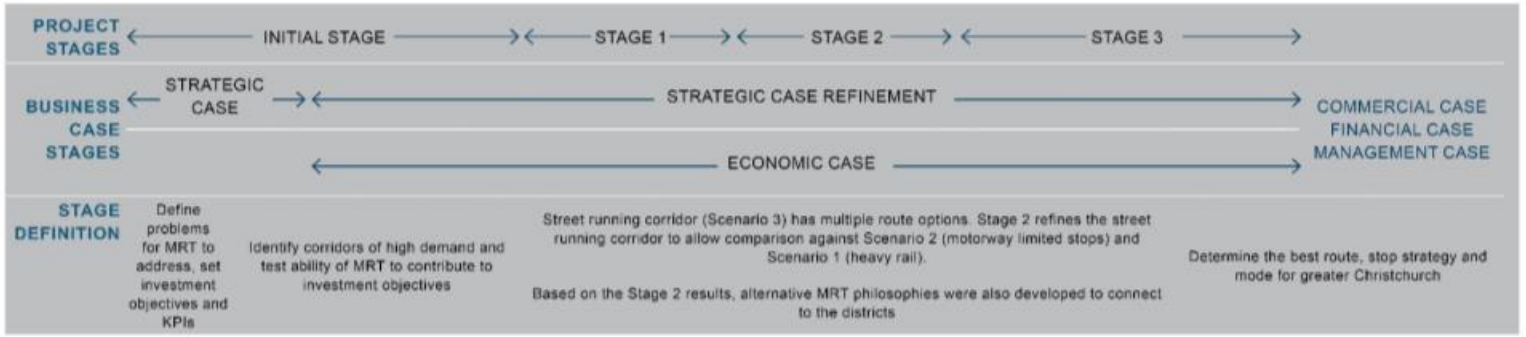
- **Long List Assessment:** Focuses on Scenario 3, as the interim study indicated this would provide the greatest uplift and had presented more variations for route and stop assessmen.t **Stage 1:** Investigates a preferred route for Scenario 3 within Christchurch City
- **Stage 2**: Investigates a preferred route for Scenario 3 extending to Waimakariri and Selwyn Districts.

Stop and Mode Strategy: Confirmed the station stop locations and mode technology across all scenarios.

Short List Assessment (Stage 3) – Refined Scenario 3 is compared back with Scenario 1 and 2 from the Interim Report. In addition, other potential MRT district extension philosophies are considered.







Approach for MRT Development

THE PREFERRED SOLUTION

MRT is a high frequency and high-capacity public transport service on a dedicated corridor, that prioritises public transport. It is a step change from the current public transport service in Greater Christchurch and more importantly, an urban shaping initiative that is fundamental to catalyse the shift in urban form required to help achieve a zero-carbon future.

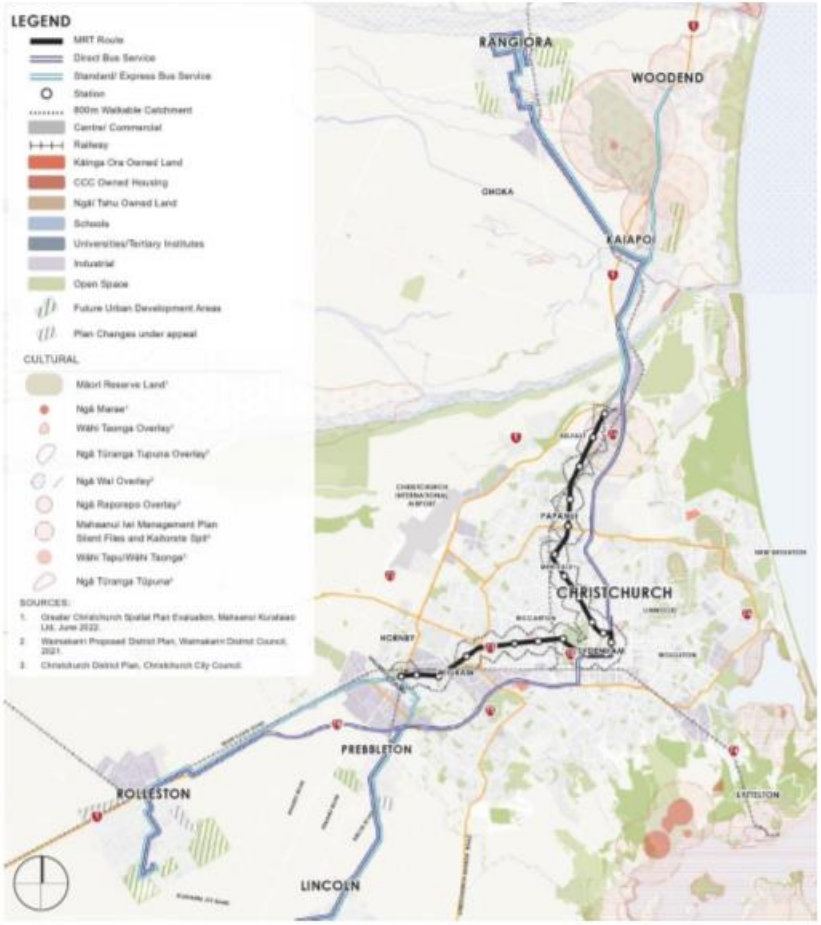
The Street Running option will result in the greatest land use integration benefits given the following:

- It will align with travel demand and where intensification is currently occurring within Greater Christchurch.
- It aligns with the greatest number of key centres and destinations, linking people with where they want to go.
- It will deliver a high amenity outcome in comparison to the other options given its 'Place' context.
- It will assist with reducing traffic congestion, as the corridor is aligned with current travel demand.
- Although the Heavy Rail and Motorway running options could provide for greater Transit-orientated development opportunities (Brownfield development), the benefits of increased densities in these locations will take time to be realised.

MRT Hornby to Belfast via the city centre 22km

21 station stops Light Rail or Bi-articulated Bus

Direct bus services connecting the districts



The preferred option description

Optioneering for mass rapid transit identified the preferred option as Option 1a: Arterial Street running MRT in Christchurch city with high quality direct bus services connecting Waimakariri and Selwyn Districts.

Northern Corridor: Papanui Road and Main North Road, supporting the urban centres of Merivale, Papanui, Northwood and Belfast along this corridor.

- Aligns well with key activity centres and town centres.
- Includes a number of significant schools in the walk-up catchment.
- Includes opportunities for transit malls at key centres.
- Includes opportunity for intensification along the route.
- Aligns with pockets of Kainga Ora ownership with the potential to unlock development opportunities.
- Could utilise existing overbridge structures to cross the railway line.

City Centre: The route follows Victoria, Kilmore, Manchester and Tuam Streets along with Riccarton Avenue through Hagley Park.

- Provides good accessibility to all key city centre destinations.
- Multi-use Arena, Ara Campus, East Frame residential area and future mixed-use developments to the east and south.
- Uses Manchester Street, which leaves Colombo Street to become the spine of a pedestrianised core.
- Aligns the Manchester Street corridor with PT as an identified function for this corridor and provides transfer connections with the Hospital 'Super Stops' and the Bus Exchange.
- Will enable PT only opportunities to exist along Manchester and Tuam Streets.

Southwest Corridor: The route follows Riccarton Road and Main South Road to Hornby.

- Aligns with Riccarton and Hornby emerging metropolitan centres as well as Church Corner Town Centre.
- Takes the shortest length in connecting Hornby and Riccarton.
- Provides an opportunity for a transit mall at Riccarton.
- Enables multi-modal transfer connection to the airport.
- Includes a high portion of residential catchment within corridor.
- Aligns with several Kainga Ora ownership parcels with the potential to unlock development potential.
- Already has high bus patronage along corridor (strong existing market).

District Connection

The PT Futures Combined Business Case includes frequency improvements to Direct Bus Services servicing the Waimakariri and Selwyn Districts. These improvements are included in the do-minimum base case for MRT. The proposed solution includes further enhancements to ensure the Direct Bus Services connect to the MRT system and provide a consistent user experience to the proposed MRT system. These additional improvements include:

- **Direct Bus Services**: The Direct Bus Services travel non-stop between the districts and the city, with the route travelled depending on traffic conditions. These Direct Bus services to the district will be enhanced by increasing frequencies to 15-minute peaks and 30 minute off-peak.
- **Standard and Express Bus Services**: Standard bus services operate within the district and connect the districts to the city via fixed routes and stop at each pickup/drop-off location. During peak periods these standard bus services also offer an Express Service which follow the fixed routes but reduce the number of pickup and drop off points These bus services will be optimised in context of the MRT offering, to ensure suitable internal district connectivity (Intra-district) and connectivity to the MRT services. Connecting to the MRT stations, initially at Church Corner and Papanui and ultimately at Hornby and Belfast, is essential in order to provide a smooth transfer onto the MRT system.
- **District Park and Ride Facilities**: Park and Ride facilities will be enhanced and optimised to ensure they are correctly scaled, configured and spatially positioned to work effectively alongside MRT. Moving beyond this IBC, consideration should also be given to referencing these as 'Multimodal Interchanges' to reflect the wider function these sites offer, in connecting transfer facilities to PT and MRT from a variety of modes including cars, bikes and scooters

Station Locations

Stations and stops have been located at key town centres along the corridor to provide opportunities to strengthen their role and function as primary destinations within the City and Sub-region. This alignment will also facilitate the integration with the wider public transport and cycle networks providing transfer opportunities to improve accessibility for the wider community. Each station has been given a hierarchy which will align with the existing future role and function of key centres and areas of intensification identified by the Christchurch City Council through draft Plan Change 14. They will also support the development of a legible urban form as the city continues to grow.



Mode Selection

The Mode Assessment process determined that both Light Rail and Bi-articulated Bus solutions are the preferred ways forward in terms of mode technology for this rapid transit system. It is recommended a decision on mode technology is refined in the DB.

Bus Metro



- Lower capital costs and easier implementation
- Flexibility to avoid traffic disruption
- More ability to stage implementation
- Resilience to natural disaster events

Light Rail



- Proximity of depot and route (land availability)
- Grade separation of mode from heavy rail (likely required)
- Infrastructure is perceived as permanent, which is a catalyst for development
- Higher capacity and ability to couple vehicles

Proposed Phasing

A phased introduction of rapid transit was considered to ensure optimal value for money that allows for the timely provision of additional services. Each phase is presented in the following figures, with both phases assuming improved direct bus services from the districts are already in place under PT Futures.

Phase 1



- Early introduction of MRT from the city to Church Corner and Papanui with interchange facilities at both
- Realigns/improves bus services from interchanges (Church Corner and Papanui) to Rolleston/Prebbleton/Lincoln and Belfast to Kaiapoi/Rangiora
- Direct Bus services from the Districts
- Limits wider impacts to the freight and SH1 network (until phase 2)

Phase 2



- Introduces MRT extensions to Hornby and Belfast with interchange facilities
- Reinforces future role and function of Hornby
- Realigns/improves bus services from interchanges (Hornby /Belfast) to Rolleston and Prebbleton/Lincoln and Kaiapoi/Rangiora

EFFECTIVENESS OF PREFERRED OPTION

The analysis considered how well the preferred option met the investment objectives:

Investment Objective 1:

Increased proportion of the population within key prioritised locations and along identified transport corridors within Greater Christchurch with improved access to Christchurch's Central City by 2051.

The preferred MRT solution focuses on high potential job and household growth locations. It compliments and enhances the vision of the Greater Christchurch Spatial Plan, unlocking urban development and increasing housing densification along the proposed route. MRT is expected to stimulate intensification with an additional forecasted growth of 15,000 additional households and 54,000 additional jobs (between 2021 and 2051) within the station (800m) catchments.

Investment Objective 2:

Improved journey time and reliability of PT services relative to private vehicles within Greater Christchurch by 2051

MRT will provide a dedicated right of way system with priority throughout the corridor, avoiding the effects of congestion and conflicts with other vehicles. The service will run reliably at consistently higher average speeds compared to a public transport bus service. Reliability is a key differentiator of MRT, which allows rapid transit services to compete with the private car as it provides users with the confidence and trust that they can get where they need to at the required time.

End-to-end (perceived) public transport journey times are expected to decrease as a result of improved in-vehicle journey times and frequency. This improves access to a range of Key Activity Centres (KACs) and employment areas, including the central city where the number of households able to access the Central City within 30min via PT increases by 9%.

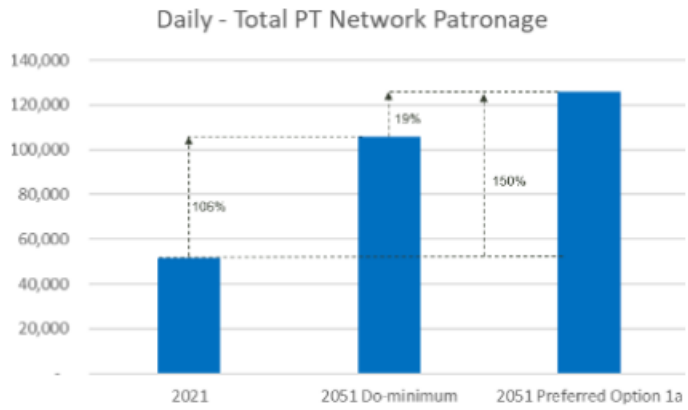
Investment Objective 3:

Reduce emissions from transport movements across Greater Christchurch by 205.1

Transport modelling forecasts MRT to reduce emissions by a further 2% beyond the 2051 do minimum option (PT Futures). In addition, there are several other factors and levers, (e.g. technology changes, human behaviours and policies) that could lead to greater reductions in enabled emissions. MRT will not only provide a reduction in private vehicle kilometres and increased PT mode share, but will also facilitate higher density land use. Intensification in targeted locations can result in people living closer to employment opportunities and other amenities. Hence, a greater proportion of people can live, work and play in smaller geographical areas, with safe and convenient active and public transport options.

Daily Patronage

Daily PT Patronage is expected to increase by 19% compared to the 2015 do-minimum. Over a 3- year horizon PT patronage is expected increase by 5.7 million trips per year between 2021 and 2051 (growing at a 4.8% annual average rate) with a 19% increase in 2051 compared to the do-minimum.



Other technical factors considered:

In making the decision on which option is preferred for MRT, a range of additional factors were considered:

Urban Design and Land Use Integration	The preferred option will enable the GCSP's compact growth scenario which supports intensification along the MRT corridor where growth is already occurring and is aligned with current policy direction and broader connectivity with the wider PT network. It also aligns with the greatest number of key centres and destinations, linking people with where they want to go. This option will deliver high amenity outcomes in comparison to the other options given its 'Place' context while assist with reducing traffic congestion, as the corridor is aligned with current travel demand.
Costs and Value for Money	The preferred option presents the lowest cost of the short listed option. An investment of $4.0b (LRT) to $3.0b (BRT) and the best value for money of all the options. While initial investment costs inBRT are lower, whole-of-life costs estimated at this early stage of the project seem to be withinclosee range. This indicates that excluding one of these technologies at IBC stage could preclude opportunities that can be best quantified at a DBC stage when uncertainty of the project's features reduces. In particular, ultimate passenger demand and capacity requirements of the system in the long term may favour an LRT option, which may also deliver higher land value uplifts.
Constructability	The construction of the preferred option is considered the least complex option and is limited to 22Km of treatment within existing road corridors. Despite this considerable disruption will occur on this route during construction and will need to be carefully staged and managed. Construction disruption has been identified as a key risk to the programme and controls and mitigations will be considered in the DBC phase.
Operational Implications	The preferred option is expected to strategically integrate well with the wider network but detailed investigations are required to fully understand any constraint and connections that may need modification (e.g. removal of U-turns, access points, freight services).
Consenting and Environmental Impacts.	An assessment of the complexity and environmental impact of the preferred option was completed. The majority of the route is within existing road reserves and transport corridors. Where measures relate to network improvements (such as frequency improvements / non-infrastructure) or improvements such as the establishment of minor infrastructure upgrades (i.e. new bus stops within the existing transport zone/road reserve), it is anticipated that any associated environmental effects will be minimal, as it is occurring within existing urban transport corridors. It is recommended a full environmental assessment is completed in the early stages of the DBC to confirm any consents or fatal flaws that may be identified as the preferred option is refined.

Urban outcomes

The introduction of MRT provides the opportunity to reshape our key centres and neighbourhoods along the route to maximise the benefits of high frequency travel and create more attractive, safer, vibrant and accessible centres. A range of interventions will help better connect people to where they want to go. Urban transformation through increasing housing and employment density, and the scale and nature of the urban form in our key centres will be key to the success of MRT, along with reducing sprawl and having boarder wellbeing and resilience benefits.

A greater focus on urban amenity and user experience will make public transport a more attractive option and encourage mode shift to alternative transport options. The city centre streets need to support the highest density of residential and commercial activities at all hours of the day and night. Walking and other active modes will be prioritised with opportunities to improve the look and feel of these areas, so they are attractive and safe. In other centres along the corridor changes to the look and feel of streets will support a range of residential and commercial activities and densities. Wider streets along parts of the corridor, such as the Main North Road will provide the opportunity for further green amenity, dedicated active modes and more generous footpath environments.

The land use scenario proposed for the preferred option seeks to establish a realistic growth scenario in alignment with GCSP and in response to MRT.

Corridor widths

In some cases, our existing road corridors are typically 20m wide, making it challenging to provide dedicated space for all users within the street. The addition of MRT and stations will require between 10 and 15 metres of the existing road width. This limits the remaining space to accommodate other modes of transport.

De-prioritisation of through-traffic within the corridor may be required along with:

- Introduction of 'Transit Malls' at key centres.
- Purchasing land.
- Compromising on the dedicated priority of MRT.
- Grade separation (bridge or tunnel) of MRT from private vehicles.

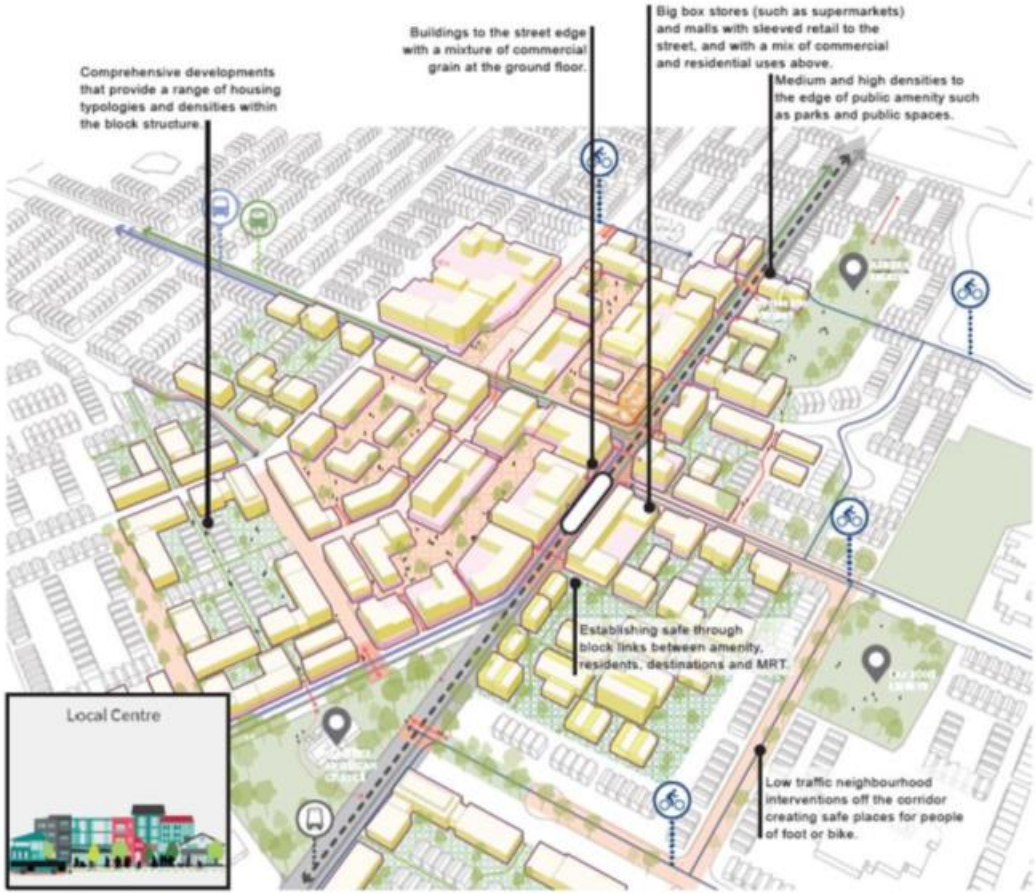
Strategic land acquisitions may be required to deliver the project outcomes near stations and major intersections. Given the city shaping nature of this project consideration should be given to targeted strategic land purchases to support the intensification anticipated (including changes in housing typologies), the change in the character of the corridor, and in achieving quality streetscape/public realm and specific 'place' outcomes.



Urban outcomes benefits

The introduction of MRT in Christchurch will:

- Support more sustainable urban form outcomes across Greater Christchurch.
- Stimulate investment in higher density, mixed use neighbourhoods along the corridor.
- Encourage mode shift, reducing car journeys.
- Help decarbonise our transport network.
- Connect communities and improve accessibility to employment nodes within the city; and
- Support a range of wider policy initiatives.



Alternative Options and Routes Considered

Why not the motorway corridors?

A motorway option has also been considered along the existing motorways. This option is better for long distance commuters as few stations offers competitive travel time. However, it was dismissed as an option for MRT in Greater Christchurch for the following reasons:

- It would have limited opportunity to integrate or stimulate growth and land use activities within Christchurch City.
- The size of our peripheral centres are not large enough, yet, to support the investment in infrastructure to service them with this form of MRT.

  The majority of Greater Christchurch's population is located within a 10 km radius of the city centre. For this option stations could be spaced more the 3 km apart that limits the number of people who live within a walk-up catchment of a station.



Why not the rail corridor?

Heavy rail was considered as a potential MRT option. However, this option was not selected as the preferred approach for the following reasons:

- The existing railway line does not go through the central city. To reduce the need to transfer, we would have to invest significantly to tunnel or trench a railway line into the central city.
- The existing railway line is not as well integrated with existing land uses and growth patterns. Given the location of the existing railway line, accommodating growth, and reshaping our key centres and neighbourhoods near the rail corridor would be necessary to achieve land use integration benefits.
- Analysis showed that heavy rail carried the lowest number of people out of the options investigated.
- The current rail infrastructure is constrained, and significant upgrades would be required to provide for passenger rail services. The cost to unlock the constraints on the network outweigh the benefits.
- While heavy rail has been dismissed as the preferred option for MRT, this does not mean that passenger rail will not happen in the future, potentially in the form of, or in conjunction with, inter-regional rail services which could be integrated with MRT interchanges.



FUNDING REQUIREMENTS

Indicative Cost of the Preferred Option

Option 1a requires a maximal capital investment of $3.0bn to $4.0bn, in real term 2023 qtr1 New Zealand dollars, including all contingencies and funding risk contingencies.

A **likely** delivery cost, **excluding** funding risk contingencies, while very uncertain at this early stage of the project can be estimated between $2.2bn and $3.0bn.

Elements of Capital Costs	$m, real terms, 2023 qtr1	
	BRT Solution	LRT Solution
Property Costs Allowance	119.03	119.03
Project Development	54.94	54.94
Pre-Implementation Phase	104.41	143.14
Implementation Phase	60.04	81.34
Physical Works	1261.80	1731.38
Rolling Stock	87.00	182.80
Contingency	506.16	693.79
Funding Risk Contingency	759.24	1040.68
Total excluding contingencies	1687.21	2312.63
Total with all contingencies equ. P(95)	**$ 2,952.61m ($3.0bn)**	**$ 4,047.10m ($4.0bn)**

Operating phase costs reported include the operational expenditures required for the management, operation (including energy) and maintenance of the fleet of mass transit vehicles, their depots, and facilities, as well as the operation costs of the PT Futures high frequency buses linking the preferred MRT corridor's end to districts.

The table below provides estimates of yearly operational and maintenance costs associated with Option 1a – LRT and option 1a – BRT. These are expressed in yearly averages over the first decade of operation and exclude bus connections to districts.

Elements of Operating Costs	$m, real terms, 2023 qtr1	
	BRT Solution	LRT Solution
Operation costs	34.86	33.94
Maintenance Costs	19.53	17.32
Contingency	5.44	5.13
Funding Risk Contingency	8.16	7.69
Total excluding contingencies	54.39	51.26
Total with all contingencies equ. P(95)	**$ 68.99m p.a.**	**$ 64.07m p.a.**

Funding Option

The Financial Case will be updated at the next phase once the preferred technical option is refined, procurement strategy are developed, level of urban development interventions and Delivery Entity taking the Programme forward is known. Funding for future stages including the DBC phase is not yet confirmed and will require decisions between the WKK partners.

ACHIEVING THE OUTCOME

Given the high benefit cost ratio (up to 2.8) and the city shaping opportunities associated with implementing the preferred MRT system as soon as possible focus should now turn to next steps to support successful delivery.

The next formal stage of works under a business case process is the **detailed business case (DBC)** which builds on this IBC to ensure the project is viable and will meet agreed objectives. This DBC will need to:

- **Develop a Stakeholder and Engagement Strategy** - To date consultation and engagement for MRT has been jointly conducted with the GCSP. As this programme moves forward it is recommended that a stakeholder communication and engagement strategy specific to the MRT is developed and actively implemented. This strategy should incorporate and respond to feedback received from the joint Greater Christchurch Spatial Plan/MRT community engagement survey held from 23 February to 26 March 2023.

  Preliminary results of this latest engagement show, of the 7000 residents surveyed the majority are open to more public transport and higher density housing. 86% agreed population growth should be centred around key centres and public transport routes and 53% supported a proposed MRT system from Belfast to Hornby. Those who disagreed wanted to see the system expanded to other areas including Rolleston, Rangiora and eastern and southern Christchurch.

- **Enable Urban Outcomes** - Once final outcomes of the GCSP and PC14 are available it is recommended a Land Use Integration Study is completed to investigate a range of regulatory and non-regulatory tools and incentives beyond zoning to drive a change in intensification and land use patterns to support MRT. GCSP and PC14 outcomes may also require modifications to the preferred MRT option as the technical solutions is refined.

- **Assess wider network and PT Futures Programme Integration** - Before commencing the detailed business case process it is recommended a network integration study is undertaken to understand how MRT will integrate with the cycle network, existing roading system (e.g. removing u-turns freight services and access at key locations), neighbourhood plans (Riccarton, Papanui, Merivale), and the city centre/bus exchange and transport plan projects (Kilmore Street). This work would provide valuable insights prior to going into conceptual design phases.

  As early as possible it is recommended partners meet to optimise and align the PT Futures Programme with MRT. This will reduce risks and maximise benefits and value for money across both programmes.

- **Develop a Property Protection and Acquisition Strategy** - Property implications have only been considered at a very high level within the IBC. It is recommended an early piece of work is conducted as soon as possible to understand property requirements and corridor protection that may be required to deliver the MRT programme. This will include strategic land purchase for amenity improvements which would increase clarity of the design philosophy moving into the full DBC stage.

Indicative Programme for Next Stages

An indicative programme has been developed for the Preferred Option which anticipates scoping, procurement and award of professional services to occur within a 12-18-month period. This is then followed by a 24- 36-month design, consultation and planning period. From the completion of the DBC, the planning approvals, land acquisition and service led design and construction phases are anticipated to be in place by 2033 to enable urban intensification. It is recommended prior to starting the DBC a review of the indicative programme activities and durations is completed once procurement models and funding arrangements are agreed.

NEXT STEPS

The success of the MRT Project is highly dependent upon its integration with the wider network and the PT Futures Programme. As the PT Futures infrastructure package is being accelerated, it is paramount for MRT not to delay the delivery of the PT Future Programme but to inform its delivery to protect the benefits that can be gained from a coordinated approach.

If the full funding of the next step in the Better Business case process, the Detailed Business Case (DBC), is not available, it is recommended that strategic pieces of work are commenced as soon as possible: These early elements of the DBC scope will mitigate critical risks identified during the IBC phase and will support key decisions in the DBC phase, once it starts.

They will include:

- A Stakeholder communication and engagement strategy
- PT Futures Integration Study
- Land Use Integration Study
- Wider Network Integration Study
- Land Use Integration Study – Priority Development Areas (PDA) within Central City, Papanui, Riccarton and Rolleston.
- Land Use Integration – Hornby Master Planning Exercise
- Property Protection Study
- MRT Service and Technology Integration Study

To enable these early strategic elements to be delivered efficiently, it is recommended upon IBC endorsement, that:

- A comprehensive project delivery plan is developed by Waka Kotahi, including a delivery programme, to co-ordinate the strategic early pieces of work and ensure they are well timed and staged to provide the inputs required by PT Futures and the MRT DBC.
- Procurement processes for the early strategic elements described above are developed and/or they are delivered under current procurement processes and frameworks of leading organisations. It is expected the procurement approach for the delivery of future stages of the programme will continue to be developed through the next phase once there is greater certainty over the Project's technical solution, Delivery Entity, and governance framework, as well as market capability.
- Funding and affordability constraints are addressed to define funding streams between partners and the Crown. This may rely in whole or in part on NLTF funding and/or other hybrid models.
- Whakawhanake Kāinga Komiti WKK (Project Partners) agree the most appropriate governance model, roles and responsibilities and delivery structures for the future of the project. Given its history to date and its future focus, the WKK is well placed to govern and support the ongoing delivery of this project and ensure its integration with other workstreams, such as the Greater Christchurch Spatial Plan/Future Development Strategy, and the Public Transport Futures Combined Business Case. As the WKK works to advance shared urban growth objectives relating to housing, infrastructure, and land use, It will adopt a flexible approach to ensure that governance structure stays relevant for each stage of the project, and take into account any applicable national direction on the delivery of MRT projects.


STRATEGIC CASE
WSP | Aurecon | Boffa Miskell |QTP

1 INTRODUCTION

New Zealand is made up of several main centres and Greater Christchurch is the second largest city and one of the fastest growing regions in the country (estimated to grow by an additional 150,000 people by 2051). The value economic output in Greater Christchurch reached around $28.65 billion in 2018, representing 10.1% of New Zealand's nominal gross domestic product. Greater Christchurch's economic success is therefore considered to be not just of critical importance to the Canterbury region and South Island but New Zealand as a whole.

Christchurch's urban growth strategy and development was severely impacted by the damaging earthquakes of 2010 and 2011. As a result, this has impacted its urban form and increased travel times between households and education and employment opportunities.

Greater Christchurch is not letting the earthquakes hold it back however and has a strategy to grow in size and economic performance between now and 2051. In the context of this anticipated growth, the Strategic Plans and Policy for Greater Christchurch (i.e. Our Space and the Canterbury Regional Transport Public Plan), outline aspirations for Christchurch to be a liveable, vibrant and competitive city. Our Space specifically seeks to establish a network of vibrant and diverse key activity and neighbourhood centres that support the Christchurch Central City, incorporate mixed-use and transport orientated development, support increased density and diversity of housing, and provide access to community facilities. This will help achieve the original Urban Development Strategy vision of a Greater Christchurch with a *"vibrant inner city and suburban centres surrounded by thriving rural communities and towns, connected by efficient and sustainable infrastructure"* .

However, Christchurch is currently a highly car dependent city and this is a trend predicted to continue. This continued perpetuation of the motor vehicle brings with it several undesirable outcomes (none of which align with the GPS, the NPS-UD, national and regional climate change and emission aspirations or Christchurch's own urban vision). Such outcomes include continued poor transport choices for residents, a high emissions transport system, poor urban form (low density development and sprawling form) that lacks integration with the transport network and other key opportunities, contributes to increased congestion and a loss of economic performance and will not support critical mass and density to help achieve vibrancy, liveability and ensure Greater Christchurch remains a competitive city of choice.

This perpetuation of the motor vehicle reflects that Christchurch, like many cities, has evolved over many decades in a way that prioritises travel by car with a dispersed urban form of low-density single-family homes and concentric rings of greenfield suburban development located at the periphery of the city. This has gradually added more and more people at greater distances from the central city and other major employment areas. Combined within the land use shifts post-quake this has resulted in a dispersal of jobs and residential areas that further reinforces this car dependence.

Over recent years there have been some improvements in density with localised infill with residential development starting to trend away from low density housing stock in the form of greenfield development towards redevelopment and intensification of existing urban areas as supported by the Christchurch District Plan and Our Space. However, this trend is not occurring fast enough or at a scale that will get Christchurch to where it wants to be.

This transition is not favoured by recent investment. At the same time as a proportionally low spend on public transport (PT), Greater Christchurch has had a comparatively high proportion of per capita spend allocated to Local Roads and State Highways, when compared to both Auckland and Wellington. This is made clear when looking at a direct comparison to Auckland which has per capita spend on Public Transport (PT) of approximately $1275, compared to approximately $225 in Canterbury.

Christchurch aspires to be a low-carbon city with transport choices, good urban amenity, strong economic performance, particularly of the central city. The current transport system, which strongly supports car use, is unlikely to enable Christchurch to achieve this or its objectives for growth and urban form and the GPS/PNS objectives for access and urban integration. As a result, there is a need for something to change and MRT is considered to have a role in this transition.

MRT, which is characterised as a high capacity, high-performance PT capable of moving a large number of people within largely dedicated or exclusive right-of-way routes) typically has the following characteristics:

- Dedicated transport corridors that ensure high-quality, high reliability, premium level transit services
- Provides exclusivity, priority and segregation of transit vehicles from private vehicles
- Enables and supports transit oriented urban development through land value uplift that can help implement strategic intensification and place-shaping strategies
- Is proven to deliver mode shift from private cars
- Is easy to use, legible and accessible
- Designed to deliver a substantial increase in patronage and
- Providing customers with a premium PT service preferred over the use of the private vehicle

While MRT would be new to the Christchurch landscape, this Strategic Case identifies that there is a role for MRT to address the identified problems. The implementation of MRT can result in a range of potential quantifiable and qualitative benefits relating to a number of characteristics associated with transport, land use, environment, economic and system performance within the city. The extent of the benefits realised will also be dependent on a number contributing factors such as the amenity and quality of residential and mixed use areas.

This Strategic Case identifies that there is alignment between many issues Christchurch is facing, and the problems identified in this business case. There is a potential role for MRT to address these problems given the typical characteristics of MRT that warrants investigation into options. The next stage is to develop options for MRT in Christchurch's context, confirm priority locations for MRT and test their effectiveness in achieving these outcomes and the efficiency, timing and need for any investment.

2 THE PROBLEMS

Project Partners (representatives from Waka Kotahi, CCC, Environment Canterbury (ECan), SDC, WDC and Christchurch 2050) have identified three problems that MRT has the potential to help resolve. They are:

- **Problem Statement 1:** Current and forecast residential and business settlement patterns perpetuate high car dependence with more people expected to drive long distances, resulting in increased transport costs to users and the wider community, and a continuation of the low mode share for PT (33%).

  Supporting evidence for this Problem Statement shows that:

  - NZ Household Travel Survey data 2014-2018 shows Christchurch has a car mode share of 83% compared to 68% for Wellington;
  - Christchurch residents each spend an average of 221 hours behind the wheel every year compared to 10 hours on PT (a substantially higher vehicle driving time than both Wellington and Auckland);
  - Canterbury has the second highest car ownership levels in the Country;
  - Christchurch has a low public mode share (Wellingtonians take around 2.8 times more PT trips than those in Greater Christchurch);
  - Current land development patterns encourage high levels of private car use and low PT uptake;
  - The Central City is forecast to strengthen its economic role, and have increased employment density;
  - Wellington and Auckland both invested significantly more per capita in PT than Christchurch, at the same time Greater Christchurch has had a comparatively high proportion of per capita spend allocated to Local Roads and State Highways;
  - Christchurch has a high volume of parking supply , especially in the Central City;
  - Christchurch has a relatively flat land value gradient from an approximate 5 km radius from the Central City, meaning developers are less encouraged to build intensively outside of the central core;
  - Future housing growth in greenfield areas including new communities in the northern and southwestern parts of the City (i.e. Halswell), growth in Selwyn at Rolleston and Lincoln and growth in Waimakariri at Rangiora and Kaiapoi will result in increased numbers of people driving longer distances to access opportunities;
  - The average trip length for private vehicles will increase from 8.4 km in 2021 to 8.8 km in 2051. The daily vehicle trips to the central city in 2021 is 174,000. Without any PT intervention the daily demand for vehicle trips to the city centre in 2051 will be 288,000 (I.e an increase 114,000 or 65%) and
  - PT mode share in 2051 is forecast to equate to just 2.6% of all daily person trips

Problem Statement 2: The PT system is not sufficiently attractive (in terms of travel time, reliability, convenience, comfort and cost) to encourage its use in preference to private vehicles, resulting in a continuation of the low mode share for PT and higher congestion, which will constrain access to the central city and other key destinations, increase public and private transport costs and restrict economic growth (33%).

Supporting evidence for this Problem Statement shows that:

- Greater Christchurch has a low mode share for PT and a continuation of current trends forecasts that this will continue through to 2051;
- Generalised cost analysis (expressed in minutes) confirms that traffic from all zones to the Hospital Precinct (the zone with the highest employment numbers in 2051) is 16.2 minutes longer for PT than the car;
- The growth in travel demand to the central city, along with continued perpetuation of high car mode share will result in a growing deficiency of access to the central city;
- By 2051 the main corridors into the city centre – which are shared by buses and cars are approaching a volume to capacity ratio of 70-%-90% which will result in a limitation on access and if left unchecked will continue to worsen over time;
- In 2018 28% of all households in Greater Christchurch can reach the Central City during the AM peak by PT and by 2051 this reduces to 23%;
- The Central City is of regional economic importance with the Central City responsible for 14.8% of Greater Christchurch's GDP and 10.5 % of the Canterbury region's GDP; and
- By 2051, 27% of all jobs in Greater Christchurch are forecast to be located within the Central City.

Problem Statement 3: As Greater Christchurch grows, a continuation of the current transport system is not sustainable, and fails our climate change mitigation and adaption responsibilities. Higher vehicle use will result in higher levels of embedded carbon, higher greenhouse gas and particulate emissions, and poorer public health outcomes (33%).

Supporting evidence for this Problem Statement outlines:

- The New Zealand Government is committed to reducing emissions and preparing for the opportunities and challenges presented by climate change;
- The Government's Zero Carbon Amendment Act 2019 sets a New Zealand target of net zero greenhouse gas emissions by 2050, excluding biogenic methane;
- All Canterbury Councils (except for Kaikōura) and Ngāi Tahu are part of the Regional Climate Change Working Group and both ECan and CCC have declared a climate emergency;
- The Canterbury Regional Public Transport Plan 2018-2028 outlines it wants to improve health and environmental outcomes by delivering a zero emissions fleet by 2028;
- The Christchurch mode shift plan looks to encourage people to use more sustainable modes to support transport's contribution to emissions targets and to manage increasing congestion associated with the additional growth;
- Households in Waimakariri District and Selwyn District are more likely to have a higher car dependency than those within Christchurch City and a greater percentage of households with more than two cars. In addition CO_2 emissions per commuter increase with distance from the Central City and transport contributes 53% of Christchurch's emissions (higher than the national contribution of 47%);
- Transport is a large contributor of the average New Zealand household carbon footprint (47% of carbon dioxide emissions in 2018 originated from transport (90.7% of which were from road vehicle emissions));
- Emissions contribute to poor air quality and in 2016 Christchurch had the worst air pollution of any of New Zealand's main centres;
- Continued high mode will result in worsening outcomes with a 45% increase forecast in carbon dioxide emissions per year from car and bus travel between 2021 and 2051;
- Transport can impact health (exposure to particulate matter exposure, more sedentary lifestyles, noise, and mental health related to reduced access and social isolation).

This Strategic Case provides evidence and analysis to show that these problems exist, have scale and sets out a series of benefits that can be achieved by solving these problems. The benefits are:

- Improved choices for access to jobs, education and social opportunities
- A more liveable, vibrant, healthier city that attracts and retains population
- Improved economic performance and investment in the Central City and priority locations
- Reduced emissions and environmental impacts from the transport system and
- Support for investment in density and quality growth in high priority locations

Resolving these problems is highly aligned to the Government Policy Statement on Transport (the GPS) including two of the Strategic Priorities identified in the GPS:

- To provide people with better transport options and
- Developing a low carbon transport system

In addition, resolving these problems is highly aligned with the Waka Kotahi Arataki Version 2 responses to:

- Improve urban form
- Transform urban mobility and
- Tackle climate change

3 STRATEGIC ALIGNMENT (STRATEGY)

This Indicative Business Case (IBC) for Mass Rapid Transit (MRT) in Greater Christchurch is one of three business cases that together form the Greater Christchurch PT Futures programme.

It comes out of the Greater Christchurch Public Transport Futures programme developed by Waka Kotahi New Zealand Transport Agency (Waka Kotahi), ECan, Waimakariri District Council (WDC), Christchurch City Council (CCC) and Selwyn District Council (SDC) to recognise the growth challenges occurring in Greater Christchurch following the 2010 and 2011 Canterbury earthquakes. The programme sought to proactively respond to the need for a public transport (PT) system with significantly increased patronage and mode share that:

- Delivers high-frequency PT options to existing Key Activity Centres (KACs) and planned growth areas;
- Provides reliable services with journey times that are competitive with private vehicles;
- Is attractive and safe to use for customers;
- Takes people where they want to go, when they want to get there; and
- Provides a catalyst for desired land use development.

This IBC is co-sponsored by Waka Kotahi, ECan, WDC, CCC and SDC. These five organisations are joined by the Ministry of Health and manawhenua to form a partnership approach.

The outcome of this IBC for MRT in Greater Christchurch is a collaborative, innovative and integrated approach to addressing land use and transport challenges in Greater Christchurch that recognises and responds to aspirations for economic, social, environmental and cultural wellbeing outcomes. This IBC:

- Reconfirms and updates the activity and strategic context for the proposed investment;
- Re-examines and updates the evidence base for the key problems and rationale for investing;
- Demonstrates how the potential benefits of investing may be assessed using SMART (Specific, Measurable, Agreed upon, Realistic and Time-related) transport Key Performance Indicators (KPIs);
- Provides an investment case that is prioritised, affordable, fundable and offers strong value proposition that is aligned with the Government Policy Statement on Land Transport (GPS) 2021/2022-2030/2031 (GPS 2021); and
- Recommends a programme sufficiently robust to deal with the rapidly changing transport environment of Greater Christchurch, including the financial, economic, commercial and management case.

3.1 HISTORY OF WORK TO DATE

There is a long history of projects that have considered the provision of PT in Greater Christchurch with those identified in considered of most relevance to this IBC for MRT.

Table 3-1: Summary of Historic Work Undertaken

Year	Report
2011	Parsons Brinckerhoff: Rapid Transit Economic Benefits – Brief Research Report
2014	Aurecon: Greater Christchurch Northern Rail – Rapid Assessment
2016	Aurecon: High Level Analysis of Designated Rail Land: Future potential use
2017	GHD: Future of Public Transport in Christchurch Strategic Case
2018	Aecom: Future of Public Transport in Greater Christchurch PBC
2020	Greater Christchurch Public Transport Combined Business Case
2021	MRT Interim Report

3.1.1 The Programme Business Case

The PBC prepared in 2018 identified the role that PT has in stimulating regeneration of Greater Christchurch and the benefits that it has for accessibility, reducing the need for more developable land to be set aside for transport corridors and car parks.

The PBC identified several integrated recommendations including:

- Continuous PT priority lanes and Rapid Transit
- State-of-the-art vehicles
- Improved bus stops
- Alignment with spatial planning initiatives
- Higher frequency and extended operating hours
- Improved information provision

The PBC outlines that the improvements need to be undertaken in an integrated manner to achieve increased PT patronage.

The recommended programme from the PBC was staged to develop a flexible network that can respond to changes in travel demand through population growth, settlement patterns, and external factors such as emerging technology or pricing.

Specifically, in relation to Mass Rapid Transit it identifies that "the provision of high-quality PT (particularly rapid transit (RT)) can act as a catalyst for regeneration and result in increased economic activity and economic benefits, transforming interchange area precincts and communities"[1].

The PBC did not specify corridors or modes (mode-agnostic) for MRT in its recommended programme elements but did specify that segregated rapid transit should occur in the highest demand corridors and that coverage should be over two corridors which it refers to as:

- North MRT: (Central City – Belfast) supported by PT priority lanes: (Belfast - Rangiora) and
- South West MRT: (Central City – Hornby) supported by PT priority lanes: (Hornby - Rolleston)

It recommended that a business case for MRT should:

- Confirm MRT corridors, develop concept designs and ensure route protection is in place;
- Consider funding models and revenue opportunities; and
- Determine timing and methodology for MRT implementation – whether demand-based evolution from PT lanes, or part of a wider strategy to lead development and regeneration.

3.1.2 Greater Christchurch Public Transport Futures Programme

The Mass Rapid Transit (MRT) IBC is one of three business cases that together form the Greater Christchurch PT Futures programme. The PBC recommended that a core route and network optimisation business case proceed first as a Single Staged Business Case with the findings of this work influencing the final scale, scope, timing and point of entry for the other work streams (with Rapid Transit identified).

To effectively plan bus priority and complementary interventions, coupled with large scale interventions such as rapid transit, the PT Futures Investment Story identified that there were three key programme implementation packages that should be developed as interrelated business cases (Figure 3-1).

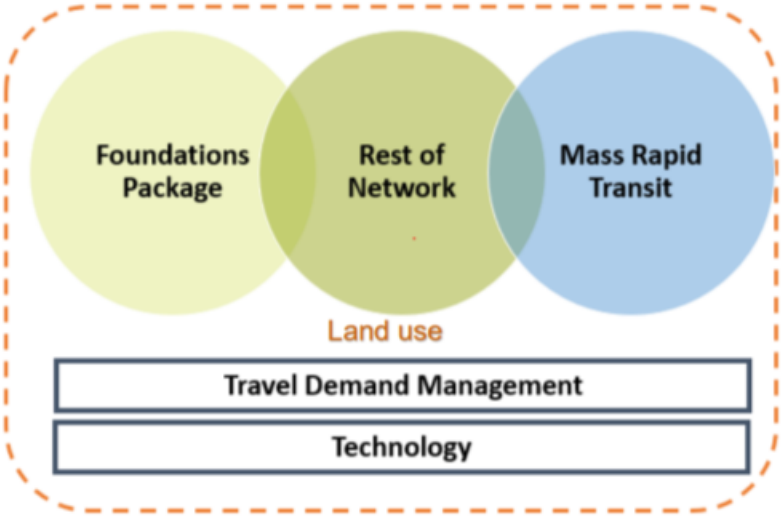


Figure 3-1: The PT Futures Programme Implementation[2]

3.1.2.1 Greater Christchurch Public Transport Combined Business Case

The Greater Christchurch Public Transport Combined Business Case (the Combined Business Case) combined the Foundations and Rest of Network packages outlined in Figure 3-1. This was completed and endorsed in

[1] p. ii (2018) Future of Public Transport in Greater Christchurch: Programme Business Case

[2] Figure 10, p. 17. (2018) Greater Christchurch Public Transport: A Case for Investment – Summary of Programme Business Case

December 2020, with the recommended option providing for the following enhancements being:

- More services connecting residents more directly to social and economic opportunities;
- Provision of approximately 100 more buses running more frequently across the network (in peaks and off-peak periods) providing users with enough available seats as well as improved scheduled hours (early and late in the day);
- 229 more bus shelters providing users with better waiting facilities;
- 190 more real time display units across the network, providing users with accurate information on bus timetables and arrival times, as well as information about delays;
- 44 RTI screens within key centres (i.e. shopping malls, hospital, libraries and airport) providing users with information on bus arrivals and departures screens;
- On-board audio-visual announcements providing information on upcoming stops and transfers;
- Approximately 22 kilometres of bus lanes making buses more reliable and faster;
- Priority measures for buses at key intersections across the city making journeys more reliable;
- Park and ride facilities at larger towns making it easier to access the bus network;
- Secure bike parking at key stops providing more options with a greater catchment to frequent bus route; and
- Enhanced on-board experience through audio announcements on upcoming stops as well as opportunities to access / transfer at these stops.

The recommended programme will be staged to ensure optimal value for money. The provision of additional service is expected to increase annual PT trips in Greater Christchurch by 3.5 million, growing at a 4.9% compound average rate from 2022 to 2028. This represents a 21% increase from 2028 Do-Minimum and a 44% increase from 2018.

The Combined Business Case is oriented toward short to medium term PT improvements (to 2038) to the existing core bus routes, additional new secondary routes and the overall bus network. This Indicative Business Case (IBC) for MRT[3] in Greater Christchurch has a longer term view (to 2051) toward identifying a preferred MRT corridor to serve and potentially act as a catalyst for anticipated land use and urban growth within Christchurch.

3.1.3 Point of Entry

The PBC recommended the Point of Entry for an MRT Business Case to occur following the Combined Business Case given the potential this has to influence the scope of a business case for MRT. As the need to investigate MRT was established in the PBC, the Point of Entry is defined as an Indicative Business Case.

The PBC specifically recommended:

> *five work streams are taken forward as business cases one being enhanced business as usual PT operations. The business cases and their suggested priorities are: 1. Core routes and network optimisation 2. Enhanced Business As Usual 3. Bus Priority 4. Demand Management 5. RT Corridors.*[4]

It outlined that the focus of the Rapid Transit Corridor business case should:

- consider segregated PT infrastructure;
- confirm Rapid Transit corridors, develop concept designs and ensure route protection is in place;
- consider funding models and revenue opportunities; and
- determine timing and methodology for rapid transit implementation – whether demand based evolution from PT lanes, or part of a wider strategy to lead development and regeneration.

Given the Combined Business Case has not defined Mass Rapid Transit routes with certainty the Point of Entry for this business case is the Indicative Business Case stage (Figure).

[3] Waka Kotahi define rapid transit in the Government Policy Statement on Land Transport (GPS) (p.59 of the 2018 GPS) as public transport capable of moving a large number of people with largely dedicated or exclusive right-of-way routes. Common characteristics of rapid transit include frequent services, fast loading and unloading capability.

[4] Future of Public Transport in Greater Christchurch, PBC, July 2018, p. 64-65

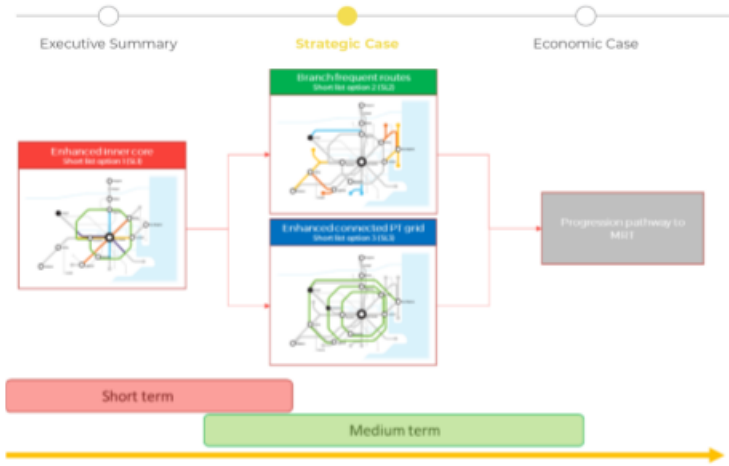


Figure 3-2: Combined Business Case relationship to MRT



Figure 3-3: Three Mass Rapid Transit scenarios previously investigated

3.1.3.1 MRT IBC Interim Report

Outcomes and Objectives were identified for an MRT scheme in Greater Christchurch through an ILM process undertaken in 2020, described in greater detail under the Investment Logic Map (ILM) of this Strategic Case.

The IBC was then placed on hold whilst further work was undertaken on the Greater Christchurch Spatial Plan work-programme (Section 3.5.6). In 2021 an Interim Report was completed to help decision makers understand the implications of the previously agreed MRT objectives and the likelihood of achieving them through investment in a MRT scheme.

The MRT Interim Report explored three rapid transit scenarios within the northern and south-western corridors of the City (Figure) that balanced access to the rapid transit system against the competitiveness with private vehicles. These scenarios were:

- Scenario 1: A heavy rail scenario – with limited stop opportunities but competitive travel times;
- Scenario 2: A street running scenario with limited stops focused on competitive travel times that generally follows the motorway corridors; and
- Scenario 3: A street running scenario (corridor focused) with more frequent stops focused on placing more households within the walk-up catchment, at the expense of travel time competitiveness.

The report concluded that the two street running scenarios (Scenarios 2 and 3) generated similar ridership, attracting approximately 70% more ridership than the heavy rail corridor (Scenario 1) given the frequency of stops and better integration with land use and key destinations.

The corridor focused street running scenario (Scenario 3) strengthens all day access to existing centres (including Hornby, Riccarton, and Papanui) whereas the limited stop scenario (Scenario 2) which follows the motorway corridors, bypasses some of these centres along with other stop locations that align with residential catchments. Scenario 3 also had the highest forecast use in PT ridership (Figure) and the most alternative routes through the central city and suburbs.

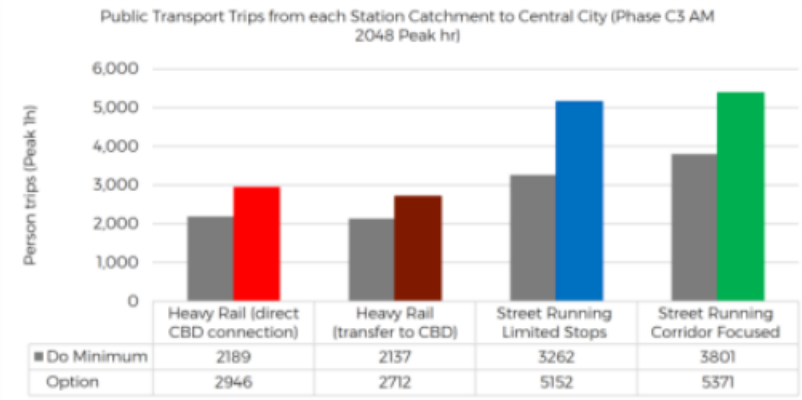


Figure 3-4: Total PT trips from station catchment areas to central city

The interim work findings indicated that the street running corridor scenario would have the highest forecast use in PT ridership, directly connecting existing Key Activity Centres (Riccarton Road and Papanui Road). Hence, while the IBC will test the value proposition of all three scenarios, the initial focus (Stage 1) of the IBC is further work surrounding the street running corridor scenario (Scenario 3) (refer to Part B)

3.2 CHRISTCHURCH'S STRATEGIC IMPORTANCE

Christchurch is of significant importance to New Zealand, being the country's second largest city and one of the fastest growing regions (estimated to grow by an additional 150,000 by 2051 (as compared to 2021). In addition, Christchurch is the largest city in the South Island and considered the gateway to the South Island.

Despite suffering from a series of damaging earthquakes in 2010 and 2011, the value of the economic output of Greater Christchurch reached around $28.65 billion in 2018, presenting 10.1% of New Zealand's nominal gross domestic product. Greater Christchurch's economic success is, therefore, considered to be not just of critical importance to the Canterbury region and South Island but New Zealand as a whole.

3.3 GEOGRAPHIC CONTEXT

The study area for this IBC is defined as Greater Christchurch, which includes and surrounds Christchurch City. As illustrated in Figure 5, Greater Christchurch extends from Rangiora in the north and the Selwyn River in the south, and from Lyttelton in the east to Burnham in the west.

The study area includes the existing overall bus network (including those changes proposed by the Combined Business Case), the existing rail corridors (comprising the Main North Line (Picton to Christchurch) and the Main South Line (Lyttelton and Invercargill)) along with state highways and local road corridors in Greater Christchurch which currently, or in the future, will carry Metro PT bus services, as well as the residential, commercial, rural, industrial and open space land use areas in Greater Christchurch.

The Greater Christchurch area is characterised by a large expanse of flat land to the west of the City which has enabled Christchurch City's urban area to spread. Despite this, a large portion of the population resides within 10km of the Central City, with growing outer areas dispersed approximately 18km and 24km from the Central City (Figure). When compared to Auckland and Wellington, this results in a much greater percentage of the population being located within a 10km radius of the central city, likely due to less geographical constraints for development.

Within the Greater Christchurch study area there are two corridors of particular focus for MRT following the PBC. These are:

- Northern Corridor (loosely travelling between Rangiora and the Christchurch Central City through northern suburbs such as Papanui to Belfast)
- South-Western Corridor (loosely travelling between Rolleston and Central City via suburbs in the south-west of the city such as Hornby, Addington, Riccarton, Ilam, Sockburn and Wigram)

These two corridors are described as 'minimum regret' options for MRT in the PT Futures Investment Story Public Transport, given centrally located rapid transit would provide benefit whether or not the city intensifies more or undertakes more greenfield development.

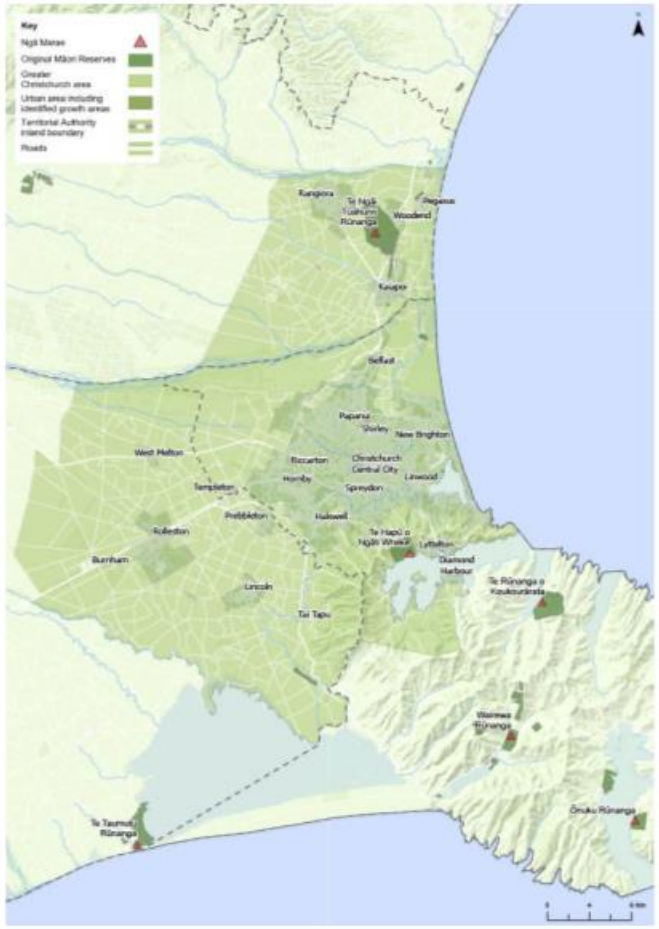


Figure 3-6: Greater Christchurch Extent

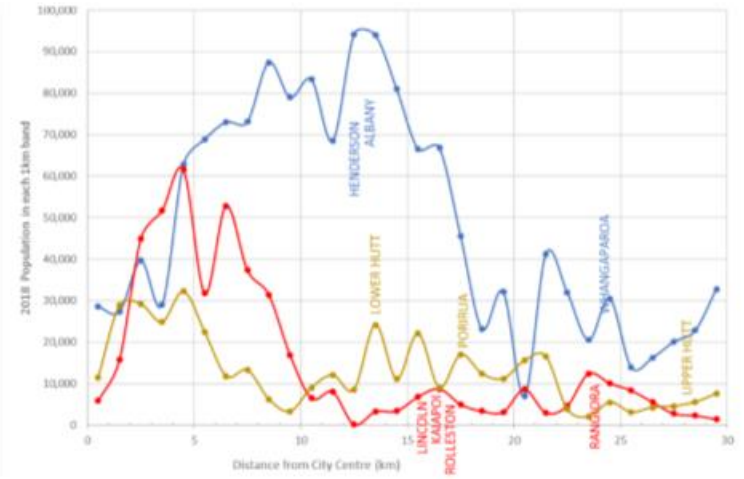


Figure 3-5: Distance of Population from City Centre - 2018 Census[5]

3.4 GOVERNANCE CONTEXT

This IBC is co-sponsored by Waka Kotahi, ECan, WDC, CCC and SDC. Development of this IBC is under the overarching strategic direction of the Canterbury Regional Land Transport Plan (CRLTP) 2021-2031 and Canterbury Public Transport Plan (CPTP) 2018-2028, with strong links to the GPS 2021.

This section explains how the scope of the proposed investment in MRT in Greater Christchurch aligns with the existing strategies of the investment partner organisations.

3.4.1 Organisational Overview

Waka Kotahi, ECan, WDC, CCC and SDC are together responsible for the planning, development, operation and maintenance of the road transport network for Greater Christchurch. In addition, they are responsible for informing land use patterns through the development and implementation of the Urban Development Strategy, Our Space 2018-2048, the Regional Policy Statement and District Plans. Combined, the five organisations form part of the

[5] Stats NZ, WSP Analysis

Greater Christchurch Partnership, which was set up to demonstrate cross-agency collaboration and leadership to plan and manage urban development across Greater Christchurch. They are joined by the Ministry of Health and manawhenua.

3.4.1.1 Waka Kotahi NZ Transport Agency

Waka Kotahi is responsible for managing, operating, planning for and improving the state highway network and delivery of PT across Aotearoa, New Zealand.

Waka Kotahi is a key investor in the transport system through funding contributions to transport projects, PT delivery, planning policies and programmes undertaken by ECan, CCC, SDC and WDC.

The strategic priorities for Waka Kotahi focus on creating a safer, more resilient and sustainable transport system that improves access to social and economic opportunities and improves the wellbeing of all New Zealanders. Its PT function is integral to these strategic priorities and future outcomes.

As an investment partner to this combined business case, Waka Kotahi is fundamentally concerned with directing investment in PT to provide alternatives to cars, improve access to economic activities, ease congestion and help unlock the potential of our cities, as set out in the GPS 2021. Effective investment is needed to help solve the problems identified in the strategic case and move towards a One Network approach integrating land use and transport and achieving more value from PT investment.

3.4.1.2 Environment Canterbury

ECan is the lead agency responsible for advocating for Canterbury's regional transport needs nationally and planning and operating urban PT services in Greater Christchurch (Metro). Collaboratively ECan works with city and district councils to provide PT infrastructure to support its services. ECan has a pivotal role in driving and managing the future form and function of PT to improve patronage, coverage, efficiency and perception.

ECan is also responsible for the Regional Policy Statement which identifies urban housing development areas in Rolleston, Rangiora and Kaiapoi and associated policy provisions that direct District Plans and drive landuse development patterns.

3.4.1.3 Christchurch City Council

CCC is responsible for managing the local road network in Christchurch which forms, with the state highway, the land transport network in Christchurch. They are also responsible for PT infrastructure and for development and implementation of the Christchurch District Plan which restricts and/or enables land use within Christchurch City.

Investment by the CCC will be critical to provide the necessary improvements to the local road network, network management, parking provisions and PT infrastructure, and to ensure the land use planning framework is supportive of anticipated land use outcomes sought.

3.4.1.4 Waimakariri District Council

WDC is the asset owner and responsible for managing the local transport system, including PT facilities and infrastructure in the Waimakariri District. The Waimakariri District generates a large number of trips to Christchurch City from the north, and the WDC will be influential in ensuring a collaborative approach to the delivery of PT infrastructure and Greater Christchurch transport network efficiency.

WDC are also responsible for the development and implementation of the Waimakariri District Plan which restricts and/or enables land use within the Waimakariri District.

3.4.1.5 Selwyn District Council

SDC is the asset owner and responsible for managing the local transport system, including PT facilities and infrastructure in Selwyn District. The Selwyn District generates several trips to Christchurch City from the south, and SDC will be influential in ensuring a collaborative approach to the delivery of PT infrastructure and Greater Christchurch transport network efficiency.

SDC are also responsible for the development and implementation of the Selwyn District Plan which restricts and/or enables land use within the Selwyn District.

3.4.1.6 Te Tiriti o Waitangi

The contemporary relationship between the Crown and Ngāi Tahu whānui is defined by three core documents; Te Tiriti o Waitangi, the Ngāi Tahu Deed of Settlement 1997 and the Ngāi Tahu Claims Settlement Act 1998 ("NTCSA"). These documents form an important legal basis for the relationship between the Crown, its agencies (which includes the Waka Kotahi, Environment Canterbury, Christchurch City Council, Waimakariri District Council and Selwyn District Council) and Papatipu Rūnanga, entrenching the principles of Treaty partnership and obligations to work together. Papatipu Rūnanga expect that Waka Kotahi, the Councils and other partners in the both the Greater Christchurch Partnership and the Whakawhanake Kāinga Committee will honour Te Tiriti o Waitangi and the principles upon which it is founded,

including principles of Partnership and recognition of their rangatiratanga status.

Te Rūnanga o Ngāi Tahu (Declaration of Membership) Order 2001 establishes individual Papatipu Rūnanga as the entities with responsibility for resources and protection of tribal interests within their respective takiwā. Greater Christchurch traverses the takiwā of three Papatipu Rūnanga to varying extent. The significant majority of Greater Christchurch's geographic area falls within the takiwā of Te Ngāi Tūāhuriri Rūnanga. The takiwā of Te Hapū o Ngāti Wheke Rūnanga centres on Rāpaki and the catchment of Whakaraupō (Lyttelton Harbour); while the takiwā of Taumutu Rūnanga is to the south of Greater Christchurch and centred on the waters of Te Waihora and its adjoining lands.

Waka Kotahi has commissioned a report from Mahaanui Kurataiao Limited, on behalf of manawhenua, to inform the Indicative Business Case. This report is attached as Appendix B – Report for Mass Rapid Transit Strategic Business Case and sets out the position of manawhenua in respect of the proposal for MRT.

3.5 LAND USE CONTEXT

3.5.1 History of Occupation and Cultural Landscapes

In 1848, the Crown acquired some 20,000,000 acres of land from Ngāi Tahu through the Canterbury Deed of Purchase. The terms agreed as part of the land purchase included the setting aside of kāinga nohoanga (translated as places of residence) as self-governing reserves. With each reserve came the rights to mahinga kai; to develop land (including subdivision) and community facilities; to develop a sustainable and growing economic base to sustain future generations; and an enduring timeframe – meaning that the reserves would belong to the people and their descendants without impediment

The Crown's agreement to the development and governance of the reserves has never been fulfilled and multiple statutes have removed these rights over time. The most significant Māori Reserve in terms of size and its location adjacent to potential growth areas in Greater Christchurch is MR873 located at Tuahiwi. The Proposed Waimakariri District Plan has rezoned the full extent of the original Reserve as Kainga Nohonanga – enabling up to 7 dwellings per property, along with commercial, educational, social, cultural and recreational activities. The future development of the Reserve is now limited by infrastructure including transport infrastructure and connectivity.

This history is of direct relevance to this Business Case; MRT has the potential to adversely impact Maori Land through the taking of land for a wider road corridor; whilst enhanced public transport services could potentially provide benefits with improved public transport connections. A more detailed narrative of the history of Ngāi Tahu whānui within the extent of Greater Christchurch is provided in Appendix B – Report for Mass Rapid Transit Strategic Business Case.

Greater Christchurch is part of a wider cultural landscape that holds considerable cultural and spiritual significance for manawhenua, reflecting the occupation of this location for over 1200 years. Accordingly, there are many sites and areas of specific cultural significance including wāhi tapu, wāhi taonga, tūranga tūpuna and ngā wai (important rivers). Figure 3-8 shows the sites and areas of cultural significance within the Greater Christchurch area as identified in the respective district plans. From a manawhenua perspective it is a priority for new urban development, including transport infrastructure to avoid wāhi tapu and wāhi taonga in particular, along with modification or disturbance to waterways.

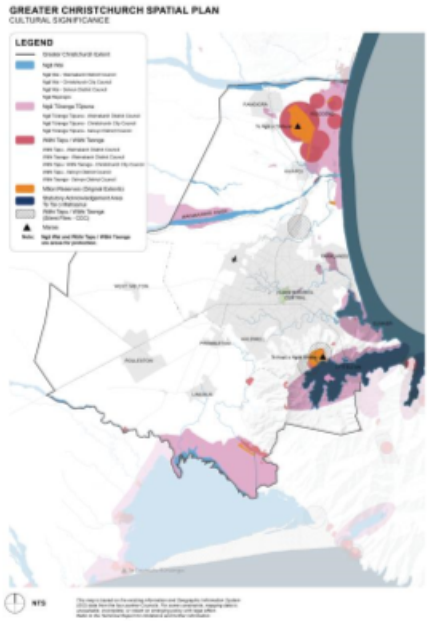


Figure 3-7: Sites and Areas of Cultural Significance within the Greater Christchurch Area (Source: Greater Christchurch Spatial Plan)

3.5.2 Earthquakes

In 2010 and 2011 Greater Christchurch experienced a series of earthquakes which resulted in widespread earthquake damage. It was estimated that some 7,800 residential dwellings were placed in the residential Red Zone (located on land deemed so badly damaged it was unlikely it could be built on in the short to medium term) and another 9,000 (excluding the Red Zone) were made uninhabitable[6]. Further the Central City was closed in response of the earthquakes due to the level of damage sustained (984

[6] https://greaterchristchurch.org.nz/assets/Documents/greaterchristchurch/13-Context-paper.pdf

buildings were either partly or fully demolished within the four avenues of the central city by September 2013[7]).

The effects of the earthquakes on land use patterns in Greater Christchurch was unprecedented and resulted in changes to the transport network and travel patterns. The earthquakes gave rise to many temporary and some permanent land use changes including a number of housing areas in the Central City, eastern areas of the city and the Kaiapoi area needing to relocate to new areas of the city (typically outer or western suburbs that suffered less damage and parts of the Selwyn and Waimakariri Districts). Large numbers of businesses relocated from the Central City to the suburbs (many to the west of the city in areas such as Addington and Riccarton). Before the earthquakes the Christchurch Central City was home to approximately 6,000 businesses, employing 50,000 people[8].

By February 2012, the Central City had experienced a 38.4 percent decrease in the number of employees at the same time the year before, whereas employees in the western suburbs of Christchurch rose by 15.9% during the same period[9].

Middleton (located near Riccarton) overtook Christchurch Central as the largest centre of employment in the 2013 census with over 7,500 people giving a workplace address there, compared with just over 2,000 in Christchurch Central. This dispersed pattern of employment can still be seen now, however, there has been strong growth in the number of people working in the centre of the city. In 2021, 45,124[10] people worked in the city centre, up from 14,946 people in 2013 (an approximate 200% increase)[11].

This land use change resulted in shifts to trip origins and destinations and resulted in some dramatic swings in traffic flows, with eastern parts of the city and the Central City typically seeing less traffic, while western parts of the city and the outskirts experienced greater flows (Figure 3-8Figure).

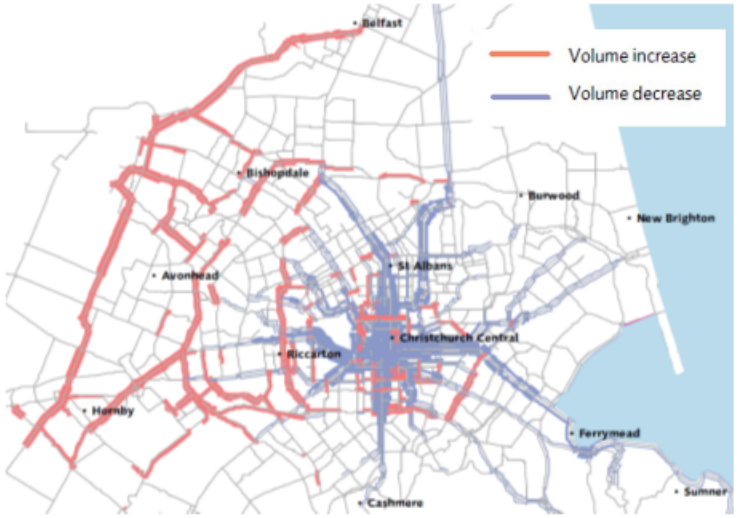


Figure 3-8: Change in Traffic Volume in April 2011 compared with pre-earthquake volumes[12]

Following the earthquakes, some of fastest growing areas of Greater Christchurch are located more than 30 minutes from the city centre (i.e. West Melton, Pegasus, Rolleston, Rangiora and Kaiapoi). Together, since the earthquakes the supporting growth areas of Christchurch have grown at 5.7 per cent per year, almost three times that of other New Zealand growth cities[13].

3.5.3 Land Use Patterns

A large portion of the Greater Christchurch population resides within 10km of the Central City, with growing outer areas dispersed approximately 18km and 24km from the Central City (refer Figure). When compared to Auckland and Wellington, a much greater percentage of the Greater Christchurch population is located within a 10km radius of the central city (Figure).

[7] https://ccc.govt.nz/assets/Documents/Culture-Community/Stats-and-facts-on-Christchurch/CommunityProfile-HagleyFerrymead-ChristchurchCentral.pdf
[8] https://www.nzherald.co.nz/business/news/article.cfm?c_id=3&objectid=10836424
[9] archive.stats.govt.nz/browse_for_stats/businesses/business_characteristics/BusinessDemographyStatistics_HOTPFeb12/Commentary.aspx#gsc.tab=0
[10] CTM Sector 2021 data
[11] https://www.stats.govt.nz/news/newly-released-census-data-shows-christchurch-cbd-bouncing-back
[12] New Zealand Government (2011). Connecting New Zealand: A summary of the government's policy direction for transport. September 2011, p.23
[13] https://www.pwc.co.nz/publications/2019/citiesinstitute/cities-urban-competitivesness-christchurch.pdf

While this trend is anticipated to continue as the city grows in population (Figure).

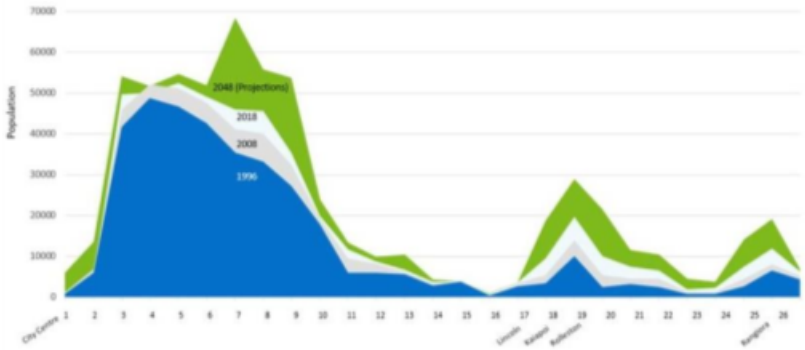


Figure 3-9: Christchurch Population Growth and Distance from the Central City[14]

Within the boundaries of Christchurch City, the proportion of infill development occurring as new development dropped to just above 30% following the Canterbury earthquakes. This is far below the infill development targets outlined in land use policy documentation for Greater Christchurch (Section 3.5.5). However, in recent years that trend has shifted with 60% of net new residential building consents in Christchurch City in 2019/2020 being for Intensification / Infill (representing the highest proportion of infill occurring since the earthquakes). In 2019 a total of 1,447 net new residential units obtained building consent as infill development, the highest number of infill dwellings consented in a single year to date (Figure).

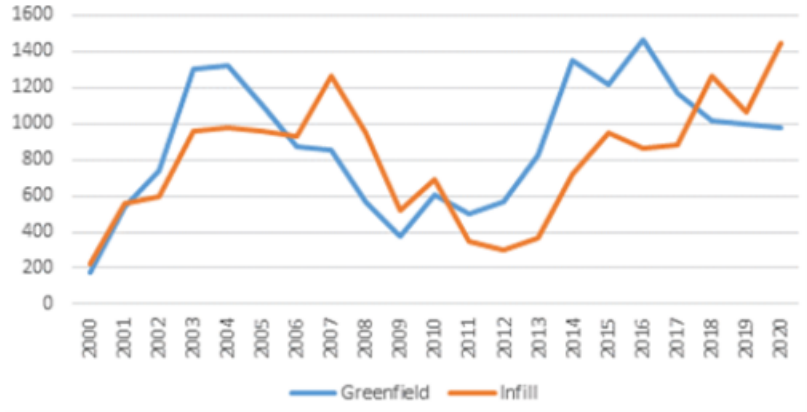


Figure 3-10: Greenfield vs Infill Development - Number of Residential Building Consents in Christchurch City[15]

In terms of recent building consents locations in Christchurch City, the top 30 areas in the 2019/20 financial year are provided in Figure and this shows that of the top five areas:

- two are within the Central City (Cathedral Square and Avon Loop),
- two are greenfield development areas (Prestons and Halswell West) and
- one is on the central city fringe (Sydenham).

[14] Figure 2, p. 4. (2018) Greater Christchurch Public Transport: A Case for Investment – Summary of Programme Business Case

[15] Christchurch City Council Residential Building Consents 2000-2020

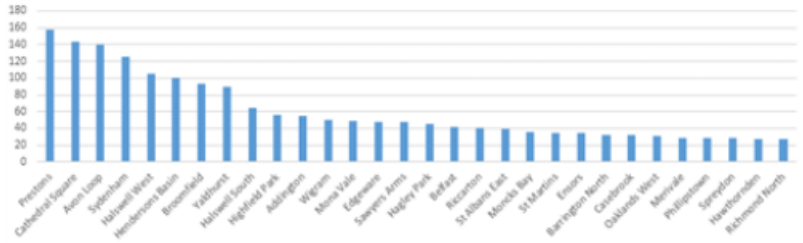


Figure 3-11: Christchurch City Top New Housing Locations 2019/2020[16]

3.5.4 Historic Land Use Policy Influence

The overarching Urban Development Strategy for Greater Christchurch is outlined within Our Space 2018-2048: Greater Christchurch Settlement Pattern Update (Our Space). This Strategy was developed by the Greater Christchurch Partnership and builds on the work of the Urban Development Strategy 2007 (UDS) and the Land Use Recovery Plan 2013 prepared under the Canterbury Earthquake Recovery Act 2011. Land use patterns in Christchurch are quite ingrained, with most development occurring to the north and west of the city (with physical constraints being the Port Hills and the technical land development challenges to the east).

The UDS 2007 was created following a three year-long consultation and development process that sought to provide a guiding vision for development in Greater Christchurch. The UDS sets a vision for Greater Christchurch to have a "vibrant inner city and suburban centres surrounded by thriving rural communities and towns, connected by efficient and sustainable infrastructure". It outlined an urban limit and identified greenfield development areas, and an overall proposed settlement pattern where growth in Greater Christchurch to 2041 would be directed to 71% within Christchurch City, 16% in Selwyn District and 13% in Waimakariri District.

The Land Use Recovery Plan 2013 (LURP) was developed in response to the land use change following the earthquakes and identified several Greenfield Priority Areas agreed by CCC, WDC and SDC for implementation through district planning processes. Under the LURP, significant residential greenfield zones were planned to the south of Christchurch City in Rolleston and Lincoln, to the north of Christchurch City in Kaiapoi and Rangiora and within Christchurch at Hornby, Halswell, Casebrook, and Belfast/Redwood. Consequently, post-earthquake development resulted in growth around the urban fringes of the City and the larger towns in Selwyn and Waimakariri at a faster rate than anticipated by the UDS. It has resulted in additional demand on the existing road network along the western corridor, as well as on the northern and southern approaches to the Central City.

Our Space seeks the same development principles, themes and strategic goals for Greater Christchurch, including:

- Clear boundaries for urban development that are defined and maintained with the existing urban area consolidated through the redevelopment and intensification of existing urban areas; and
- New urban development is well integrated with existing urban areas.

It also acknowledges the following key growth issues for Greater Christchurch:

- Delivering new dwellings through redevelopment and intensification;
- Meeting housing needs and preferences for current and future residents;
- Recognising post-earthquake trends and anticipating future drivers;
- Integrating land use and transport planning to shape desired urban form; and
- Living with and mitigating climate change impacts.

3.5.5 Land Use Policy and Future Land Use

National Direction

Resource Management Act Reform

In February 2021, the Government announced it would repeal the resource management act (RMA) and enact a new legislation based on the recommendations of the Resource Management Review Panel. The proposed new legislation includes three proposed new pieces of legislation to replace the RMA. The proposed Natural and Built Environment Act (NBEA) will be the primary piece of legislation in the reform package supported by the Strategic Planning Act (SPA) and Climate Adaptation Act. An exposure draft of the NBEA was released June 2021.

The fully developed NBEA bill and the SPA Bill were introduced to the house on 15 November 2022. Currently, a final round of public feedback is being undertaken with both bills with the select committee. The Climate Adaptation Bill is expected to follow in 2023. Government intends to have both bills enacted before the end of this parliamentary term.

[16] CCC Building Consent Figures 2019/2020 Financial Year

National Policy Statement on Urban Development 2020

Objective 1 of the NPS-UD sets out: "New Zealand has well-functioning urban environments that enable all people and communities to provide for their social, economic, and cultural wellbeing, and for their health and safety, now and into the future."

In contributing to well-functioning urban environments, Policy 1 requires planning decisions to contribute to a variety of homes to meet the needs of different households including enabling Maori to express their cultural traditions and norms. Planning decisions are also required to contribute to the differing needs of the business sector, provide good accessibility for all people including by way of public and active modes and also support reductions in green house gas emissions and resilience to climate change.

Policies 3 and 4 are particularly relevant to MRT setting out the urban environment outcomes in relation to Tier 1 councils, with specific considerations for the scale and density of development in relation to existing and planned rapid transit. This is explored in more detail throughout this report.

The National Policy Statement on Urban Development 2020 (NPS-UD) provides direction to local authorities to remove all minimum carparking standards from District Plans. It also requires that all Tier 1 urban environments (such as Greater Christchurch – CCC, SDC and WDC) enable minimum 6 storey building heights in metropolitan centres[17] and within a walkable catchment of existing and planned rapid transit stops. Modifications are required to the existing District Plan's to give effect to this with Tier 1 councils required to notify plan changes implementing intensification policies no later than 20 August 2022.

Resource Management (Enabling Housing Supply and Other Matters) Amendment Act 2021

The Resource Management (Enabling Housing Supply and Other Matters) Amendment Act 2021 (EHS Act 2021) was introduced in 2021 to support greater housing density. Ultimately it seeks to enable three homes of three storeys in height to be built on most residential sites in Tier 1 centres (i.e. the Greater Christchruch area) without the need for resource consent. The Tier 1 District Councils (CCC, SDC and WDC) are required to update their District Plans to give effect to this by August 2022. This will likely lead to a significant increase in zoned housing capacity.

SDC notified their plan change 20 August 2022 and WDC notified their plan change 13 August 2022. CCC failed to notify their plan change within the EHS Act 2021 timeframes, after councillers voted to not to notify the proposed change[18] in September 2022. However, the plan change was since redeveloped, and CCC will notify the alternative Draft Housing and Business Choice Plan Change (PC14) on 17 March 2023.

Regional Direction

Our Space

Greater Christchurch's 2021 population of 499,000 is projected to grow to over 655,000 by 2051. Planners have identified proposed locations for future development areas in Christchurch to 2051 (Figure), seeking to consolidate growth in and around Christchurch City and larger towns in Selwyn and Waimakariri. As such 75% of Greater Christchurch's housing growth through to 2051 is to be met within Christchurch City with the remaining 14% in Selwyn and 11% in Waimakariri.

Our Space proposes that future housing demand will be met by redevelopment of existing urban areas of Christchurch City (45%) and by existing greenfield areas within Greater Christchurch (36%). Just 19% of future housing demand will be met by new greenfield and redevelopment areas in Selwyn and Waimakariri. It identifies the need for additional land in Rolleston, Rangiora and Kaiapoi to meet medium term capacity needs. It is anticipated that the density of future developments in these areas will achieve a minimum net density of 12 households per hectare.

[17] Metropolitan Centres are not defined in the NPS-UD. However **rapid transit service** is defined as any existing or planned frequent, quick, reliable and high-capacity public transport service that operates on a permanent route (road or rail) that is largely separated from other traffic. A **rapid transit stop** means a place where people can enter or exit a rapid transit service, whether existing or planned.

[18] https://newsline.ccc.govt.nz/news/story/christchurch-says-no-to-governments-intensification-direction

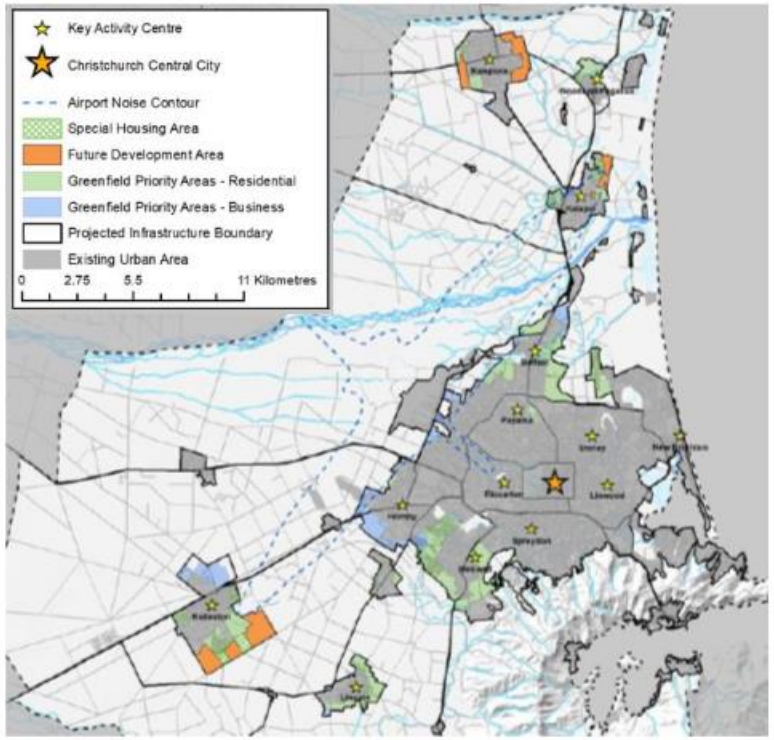


Figure 3-12: Proposed locations of future development areas in Greater Christchurch (indicative only)[19]

The key growth areas identified are:

- **Christchurch City:**
  - Central City residential growth (20,000 people within the central city in new residential developments);
  - Key Activity Centres – new opportunities around Key Activity Centres for land use redevelopment linked to the surrounding neighbourhoods; and
  - Suburbs – new communities in the northern and southwestern parts of the City (i.e. Halswell).
- **Selwyn:**
  - Rolleston – continued principal centre of Selwyn (greenfield development growth); and
  - Lincoln – development within the existing identified greenfield areas.
- **Waimakariri:**
  - Rangiora – remains the principal centre of Waimakariri – regeneration of older housing stock and new greenfield development (largely to the east); and
  - Kaiapoi – regeneration of existing housing stock and new greenfield to the north.

Canterbury Regional Policy Statement

The Minister for the Environment approved Proposed Change 1 to Chapter 6 of the Canterbury Regional Policy Statement (CRPS) under the streamlined planning process in 2021. This change was made operative on 28 July 2021, and updated the CRPS give effect to the future urban housing development areas identified Our Space for Rolleston, Rangiora and Kaiapoi (updating Map A 'Greenfield Priority Areas and Future Development Areas'.

Christchurch District Plan

The operative Christchurch District Plan (CDP) supports and provides for opportunities to redevelop and intensify existing urban areas to meet both housing and business needs. This is focused around the Central City, Key Activity Centres, larger neighbourhood centres and nodes located along core PT corridors (Figure).

[19] Greater Christchurch Partnership (2019). Our Space 2018-2048: Greater Christchurch Settlement Pattern Update, p.30

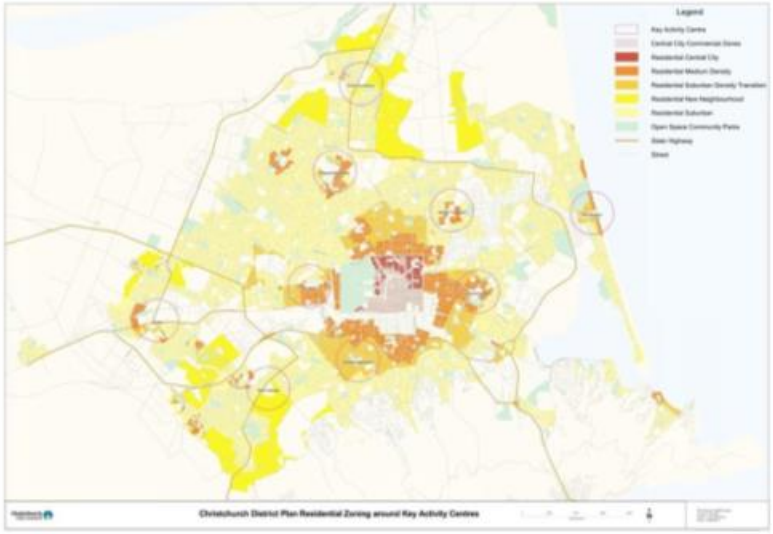


Figure 3-13: Operative CDP Residential Zoning

Changes are currently proposed as part of the draft Housing and Business Choice Plan Change (PC14) to the CDP to enable a greater scale and density of residential and business development in urban areas, provide for continued growth and prosperity and bring the District Plan in line with the NPS-UD and the EHS Act 2021. These changes are subject to a plan change process but are scheduled to come into effect by April 2024. The proposed plan change creates a number of residential and commercial zones in the city, within which different heights of development are enabled for housing.

The principal changes are:

- Enabling a minimum of three residential units up to three storeys high on most properties in residential zones (up to 14m in height), with specific rules that apply to such development;
- Enabling more intensive building development within and around the central city and suburban centres within the proposed high density residential zone, enabling up to 6 storeys or (20m in height), with specific rules that apply to such development; and
- The scale and density of buildings enabled, both in residential zones and within and around centres, is reduced where it can be justified by specific circumstances of sites and areas of the City that meet the criteria to be "qualifying matters". The plan change proposes to limit the intensification of building development that is enabled where a range of "qualifying matters occur.

Increased commercial development will be enabled in the central city and suburban commercial centres, with the proposed new centre zoning outlined by Figure 3-14 and Figure .

Centre Type	Location	Extent	Enabled Height
Neighbourhood Centre & Local Centre	Addington; Fendalton; Edgeware; Parklands; Woolston; St Martins, etc.	Centre only	MDRS – 12m
'Large' Local Centre	Bishopdale; Barrington; Prestons - only	200m	14m – four storeys
'Significant' Local Centre	Merivale & Sydenham - only	400m	20m – six storeys
Town Centre	Church Corner; Linwood; North Halswell, etc.	400m	20m – six storeys
'Emerging' Metropolitan Centre	Riccarton; Hornby; Papanui - only	600m	20m – six storeys

Figure 3-14: Proposed Centres Zoning

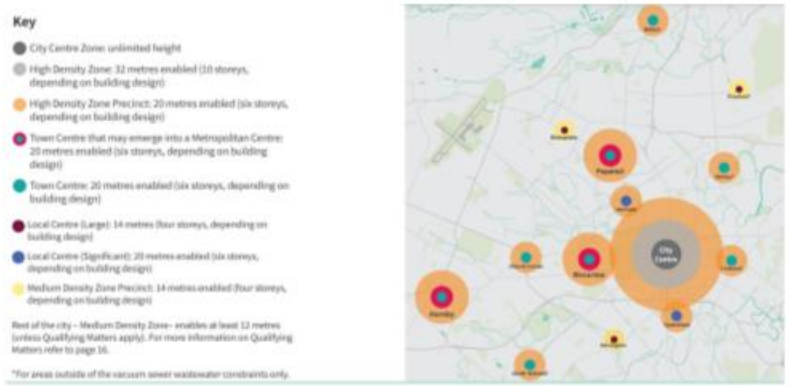


Figure 3-15: Summary of Proposed CDP Centres and Draft Development Provisions

Selwyn District Plan

Selwyn are currently undergoing a District Plan Review Process. The Proposed Selwyn District Plan (pSDP) was publicly notified in October 2020 with the close of submissions 11 December 2020. The Council is currently preparing a variation to the pSDP to give effect to the EHS Act 2021 . To enable the variation process to be completed, including the new hearings, there will be a delay on when the Proposed Plan becomes operative. It is now expected that the pSDP is to become operative in early 2024, subject to any appeals.

The scope of the variation to the pSDP covers:

- the introduction of a new Medium Density Residential Zone that will be applied to relevant residential zones in Rolleston, Lincoln and Prebbleton; and
- additional land for residential development in Rolleston, including certain private plan change requests which are currently being processed.

Waimakariri District Plan

Waimakairi is currently undergoing a District Plan Review Process. The proposed Waimakariri District Plan (pWDP) was publicly notified late 2021, with submissions closing November 2021. The notified pWDP sought to give effect to the outcomes sought by Our Space and the NPS-UD, but has been delayed while WDC seek to also give effects to the EHS Act 2021. To give effect to the EHS Act 2021, Waimakariri has prepared Variation 1: Housing Intensification, The proposed plan change was notified on 13 August 2022 with submissions closing on 9 September 2022. The scope of the Variation 1 includes the introduction of a new Medium Density Residential Zone that is applied to all relevant residential areas within Rangiora, Kaiapoi, Woodend and Pegasus.

3.5.6 The Greater Christchurch Spatial Plan

The Greater Christchurch Partnership has embarked on the development of the Greater Christchurch Spatial Plan (GCSP). The GCSP will consider how a possible future population of 700,000 can be successfully accommodated in Greater Christchurch (representing 170,000 or 30% more than the current population of Greater Christchurch) by 2050.

The GCSP will build on the strong spatial direction set by the Greater Christchurch Partnership through the UDS 2007 which provided a strong framework for the response following the Canterbury earthquakes, and the subsequent key documents produced by the Partnership over the years (Figure).

The GCSP will be developed to give effect to relevant national policy direction, including the Urban Growth Agenda; the government policy statements on housing and urban development, and land transport; the NPS-UD; and the emerging Emissions Reduction Plan for Aotearoa New Zealand. It will also be cognisant of the emerging directions from the resource management system reforms, especially from the proposed Strategic Planning Act which, has so far indicated that the development of long -term regional spatial strategies will be required.



Figure 3-16: Greater Christchurch Partnership Key Planning Documents[20]

The GCSP sits within a wider local, regional and national context. This MRT IBC and the GCSP are strongly interdependent (Figure), recognising the importance of greater intensification of land use to reduce dependence on car travel, house people more sustainably and affordably, and realise the benefits of economic agglomeration, and the need for intensification to support the feasibility of significant transport infrastructure investments, such as MRT.

The GCSP seeks to prioritise sustainable transport choices to move people and goods in a way that significantly reduces greenhouse gas emissions and enable access to social, cultural and economic opportunities. It looks to set out how Greater Christchurch provides community wellbeing and prosperity into the future in the context of population growth and climate change.

[20] Agenda of Greater Christchurch Partnership Committee - 14 May 2021 (infocouncil.biz), p.14

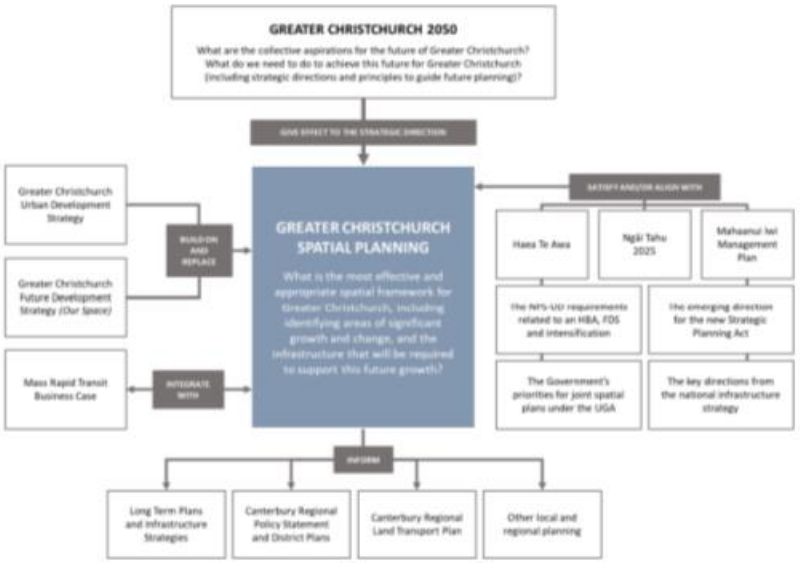


Figure 3-17: GCSP Relationship with Local, Regional and National Planning Documents

The draft GCSP's strategic direction is:

- Intergenerational wellbeing through collective action;
- A sustainable urban form which supports wellbeing;
- A vibrant place that people love;
- Regenerated natural environments;
- A sustainable economy that attracts and grows innovative people and ideas; and
- Empowered people.

To achieve this, the several priorities, challenges and opportunities have been identified, with one priority relating to this IBC specifically being to decarbonise the transport system (Figure).

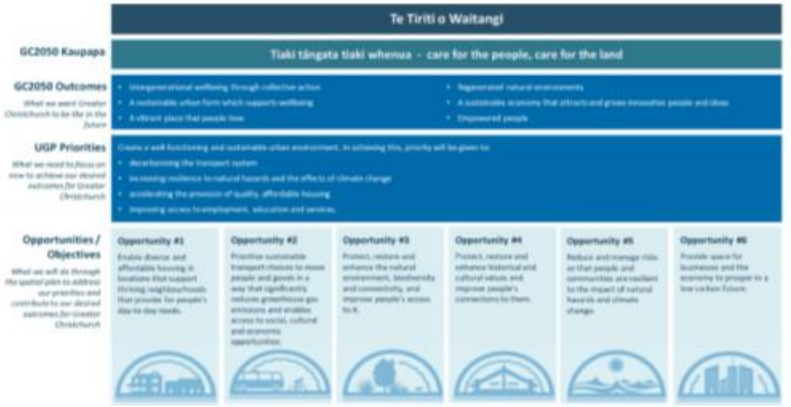


Figure 3-18: The GCSP Emerging Strategic Direction

The emerging direction in the plan is that the following urban shifts are required:

- Greater intensification and density of employment and living around centres and along transport corridors, less low density / greenfield development;
- Kāinga nohoanga opportunities are realised;
- Economic agglomeration that leverages our economic strengths and assets and strengths our economic contribution to NZ;
- Accessibiilityto employment, everyday needs through public and active transport; and
- A blue- green network which provides sustainable habitats and biodiversity and mitigates the effects of climate change

Achieving these shifts would result in most people in Greater Christcurch being able to access services and employment via active or PT modes and PT being a competitive alternative to private car use. The plan also seeks an urban housing shift where more people live in multi-unit developments within easy access using active and PT to services and employment and that there is a greater use of public realm to provide space for recreation an socialising.

The GCSP is evaluating three different urban form/land use scenarios to underpin the emerging form direction of Greater Chrischurch (Figure). Three

growth scenarios have been used to understand the implications of different ways Greater Christchurch may grow and transition over the next 30 years:

- Compact Scenario: This land use scenario provides an urban form focused on greater intensification in centres and along transit corridors. More growth occurs in Christchurch City in a higher proportion of apartments, terraced housing and townhouses.
- Consolidated Scenario: This reflects an urban form consistent with current policy direction. Growth occurs more evenly across Greater Christchurch, in a mix of housing typologies. Rangiora and Rolleston grow into larger satellite towns.
- Dispersed Scenario: This scenario has less emphasis on intensification. Growth occurs more evenly across Greater Christchurch, predominately in detached housing.

For the purpose of data used in this strategic case, all information has presented showing the 2021-2051 consolidated landuse scenario which is the 'do minimum scenario'. It incorporates the programme of currently planned road network and PT service short to medium term improvements as proposed in the Combined Business Case and uses the 2051 GCSP Land Use Scenarios.

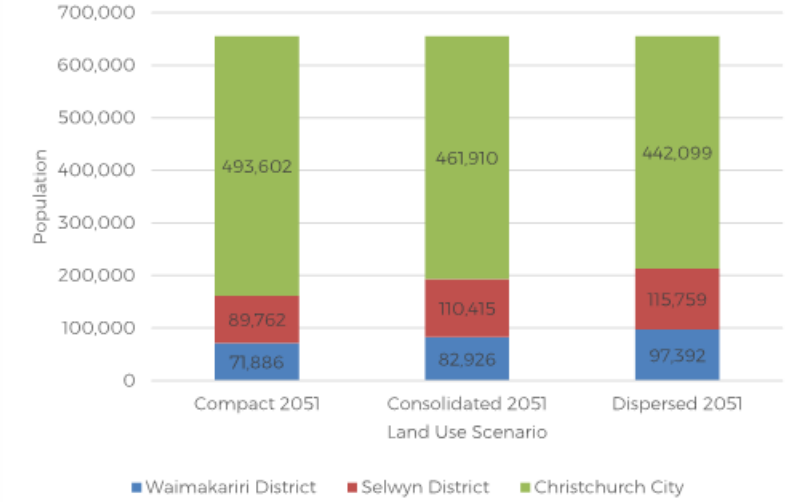


Figure 3-19: Greater Spatial Plan Land Use Scenario Population Distribution

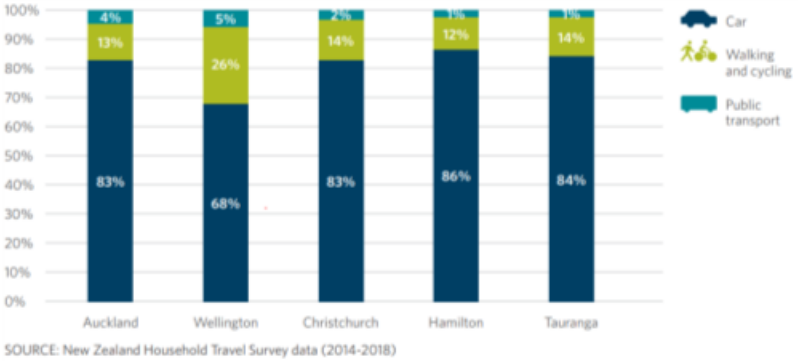
Comparison

Overall, the GCSP, in combination with the changes being made to the three District Plans in Greater Christchurch to give effect to the EHS Act 2021 and NPS-UD are anticipated to enhance the likelihood of more intensive urban development in catchments along future transit corridors and reinforce the need to align urban form and MRT outcomes.

3.6 TRANSPORT NETWORK CONTEXT

3.6.1 Transport Network

The Greater Christchurch transport network is currently dominated by cars which comprise 83% of total trip legs in Christchurch (as shown by Figure).



SOURCE: New Zealand Household Travel Survey data (2014-2018)

Figure 3-20: Mode share of total trip legs in New Zealand (2014-2018)[21]

In recent years, investment in Greater Christchurch has focused on legacy earthquake repairs, new State Highway capacity (Christchurch Northern and Southern Corridors) and cycling (CCC Major Cycle Routes (MCRs)), with relatively little investment in PT (other than the Christchurch Bus Interchange and establishment of bus lanes). This investment reinforces the existing mode share in which daily trips by private vehicles dominate.

The Christchurch Northern Corridor (12km motorway extension to Cranford Street) opened December 2020, providing a more direct connection to the Waimakariri District. Stage 2 of Christchurch Southern Motorway (Halswell Junction Road to Rolleston) also opened late 2020, providing a more direct connection to Rolleston and Selwyn District. The opening of these two roading programmes, is anticipated to make these corridors more attractive for single occupancy vehicles (SOVs) and freight, however it is noted that the Christchurch Northern Corridor also provides for direct PT services from the Waimakariri District to the Central City.

Pricing mechanisms (i.e. availability and cost of carparking in the Central City and at other key destinations) are not used in Christchurch as they are in other cities such as Auckland and Wellington to deter private vehicle use.

In addition, when compared to Auckland and Wellington respectively the Christchurch transport network has fewer network constraints resulting in less time lost due to driving during rush hour. For example, a normal 30-minute trip in Auckland and Wellington, taken during peak hour would add an additional 20 and 19 minutes to the journey time respectively. In contrast in Christchurch only an additional 12 minutes would be added to a 30-minute trip taken during the morning peak[22].

CCC have invested in cycling through the Major Cycle Routes (MCRs) programme which looks to make active transport a more desirable, and competitive mode choice. The thirteen routes which are at various stages of implementation were developed in response to a community desire for more travel choice and safer cycling options following the 2010 and 2011 Canterbury earthquakes. Cycle trip numbers for the annual count across all of locations with counters in place in Christchurch City have increased 80 per cent since the MCR's began opening in 2016. This increase in cycle trip numbers has continued and from March 2019 to March 2020 cycle numbers at several locations were up nearly 20 percent (2,234 cycle trips in the morning peak in 2020 compared to 1,869 cycle trips in 2019). Christchurch City now has a substantially higher percentage of people using the cycle as their main means to travel to work compared to the rest of New Zealand (Figure). There remains an opportunity for PT to further support active travel in Christchurch to assist with continued mode shift from private vehicles.



Figure 3-21: Main means of travel to work for people in Christchurch and New Zealand, 2018 Census[23]

Figure demonstrates that areas closest to the central city have the highest percentage of population that use active travel (biking and walking) as their mode to travel to work. Further the 2018 census data identifies that active modes of transport were more common than PT for workers in the Christchurch central city, with more than twice as many people walking, cycling, or jogging than catching the bus or ferry[24].

[21] Figure 2, p.10 https://www.nzta.govt.nz/assets/resources/keeping-cities-moving/Keeping-cities-moving.pdf
[22] https://www.tomtom.com/en_gb/traffic-index/christchurch-traffic/
[23] https://www.stats.govt.nz/tools/2018-census-place-summaries/christchurch-city#transport
[24] https://www.stats.govt.nz/news/newly-released-census-data-shows-christchurch-cbd-bouncing-back

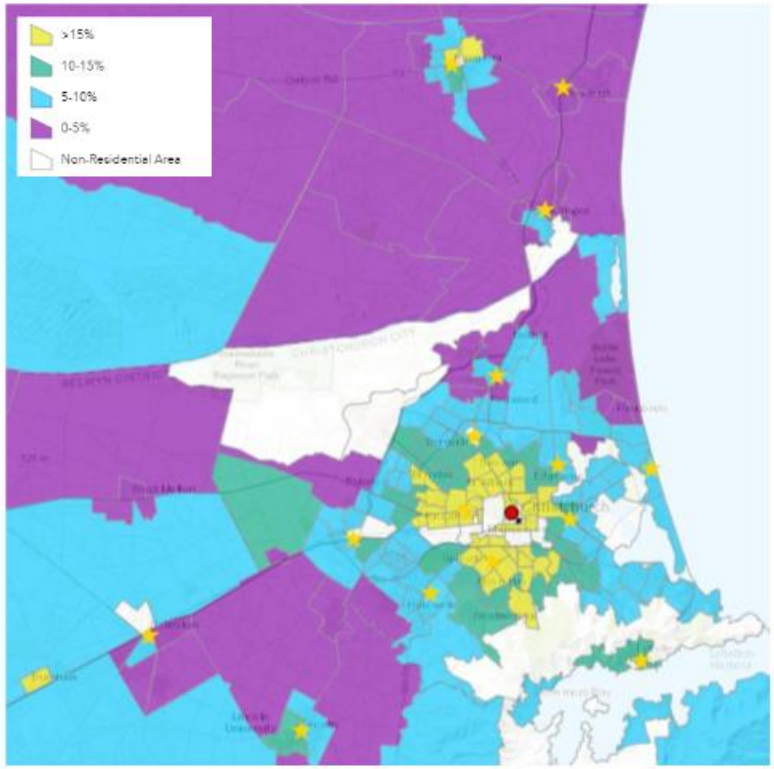


Figure 3-22: Percentage of Workers that Travel to Work by Active Modes - Census 2018 Travel to Work

Figure similarly shows percentage of population using the PT network as their mode to travel to work. It outlines that suburbs immediately surrounding the Central City, especially those to the to the east and south, and areas the vicinity of the Riccarton Road/Blenheim Road corridor have the highest PT use.

In summary, active modes are effective for shorter trips (i.e. those to the central city from the surrounding suburbs) and there is good PT uptake in some areas (i.e. South of Riccarton), and in the area immediately south of the Central city. However, despite this, the car continues to dominate all trips in Greater Christchurch.

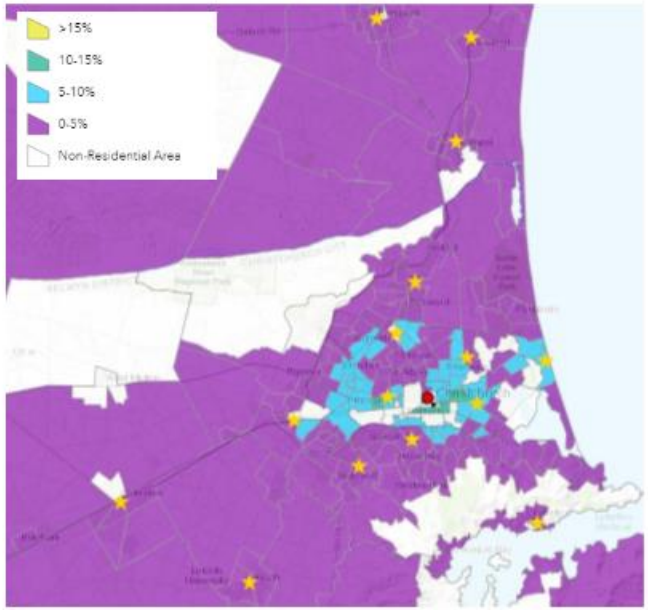


Figure 3-23: Percentage Workers that Travel to Work by the Bus - Census 2018 Travel to Work

3.6.2 Public Transport Network

The PT network consists of 25 bus services that operate as part of a radial network model, with 15 routes travelling to/through the central city and 10 across/around the city.

As at July 2019, the network was operated by 208 buses and one ferry, which made almost 60,000 trips per year. This equated to almost 300,000 km per week and over 15.5 million kilometres per year[7]. There are currently three contracted operators running the network's services (RedBus, Go Bus and Ritchies). These contracts have recently been re-awarded with the new contracts commencing September 28, 2020.

The current bus network currently offers the following types of bus services, described below and shown in Figure [25].

- **High Frequency Lines** (formerly termed Metro Lines) - Five core routes run along Christchurch's major road corridors, connecting people to significant KACs, destinations and larger towns in Selwyn and Waimakariri including Rangiora, Kaiapoi, Lincoln, Templeton and Rolleston.
- **City Connectors** (formerly termed Metro City Connectors) allow people to travel from outer suburbs/towns directly to the Christchurch Central City.
- **Suburban Links** (formerly termed Metro Suburban Lines). Suburban links allow people to travel between the inner suburbs while bypassing the Christchurch Central City. People wanting to go to the Christchurch Bus Interchange need to transfer onto another bus at transfer points located throughout Christchurch.
- **Peak Only Services** A number peak only services now operate to the outlying towns, with several of these introduced January 2021 following completion of the Combined Business Case (ie. the new Rangiora to City direct and Kaiapoi city direct services).

CCC provides bus lanes at some locations (i.e. along sections of Colombo Street south of the Central City, Papanui and Riccarton Road), which operate during peak commuting hours on some routes. While many of the existing road corridors have enough width to provide for priority bus lanes it is important to note that such changes require extensive public consultation and engagement to alter road prioritisation and for parking removal.

There is no rapid transit provision in Greater Christchurch.

Following the disruption of the Christchurch earthquakes which altered land use, the transport network, and travel patterns, Greater Christchurch experienced increased travel by car and a sharp drop in PT patronage. Since then PT has experienced some initial recovery patronage, but this has fallen again since 2014. On average, each person in Greater Christchurch makes 26.5 trips on PT per year[26]. Between 2017 and 2019, PT patronage has hovered at just under 14 million trips annually, despite population increases in Greater Christchurch.

[25] Metro (2020). Christchurch Metro Network Map. Retrieved September 2022, from https://www.metroinfo.co.nz/assets/Maps/chch-network-map.pdf

[26] Wilke, Axel (2018). Talking Transport: Lies, damned lies, and patronage statistics. Retrieved 20 March 2020, from https://talkingtransport.com/2018/12/09/lies-damned-lies-and-patronage-statistics/

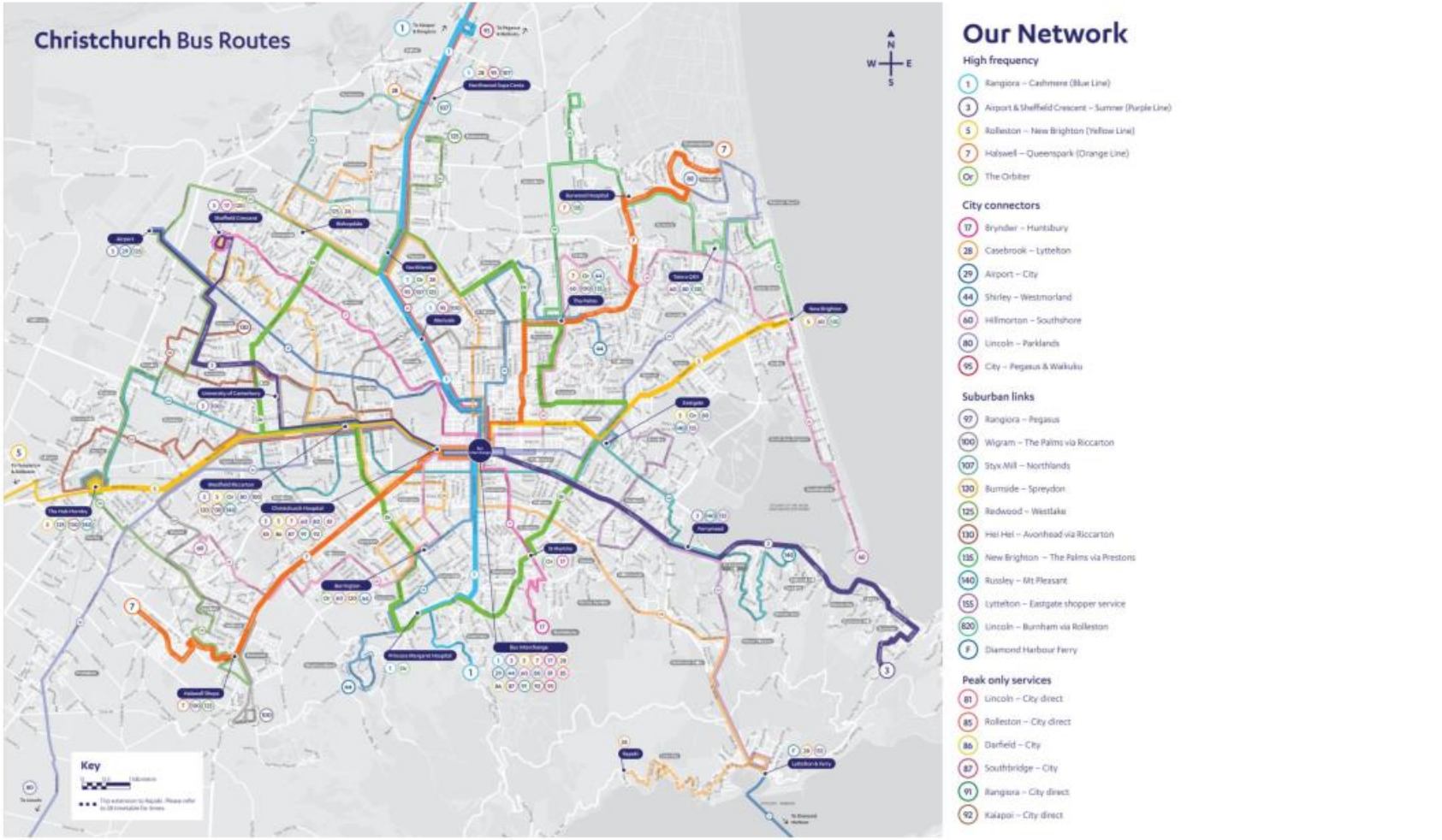


Figure 3-24: Greater Christchurch Metro (bus) Network Map

3.6.2.1 Future Changes to the Network

The endorsed PT Combined Business Case will make a number of improvements to the existing PT network over the next 10 years. This will include:

- A revised bus network that will provide for expanded, frequent network coverage (Figure);
- Approximately 100 more buses providing more seats to more locations more often;
- 229 more bus shelters providing better waiting facilities;
- 190 more real time display units providing accurate information on bus arrival times;
- On-board audio-visual announcements providing information on upcoming stops and transfers;
- Approximately 22 kilometres of bus lanes making buses more reliable and faster;
- Priority measures for buses at key intersections across the city making journeys more reliable;
- Park and ride facilities at larger towns making it easierto access the bus network; and
- Secure bike parking at key stops providing more options with a greater catchment to frequent bus routes.



Figure 3-25: Combined Business Case Future Bus Network

3.6.3 Future Demand for Public Transport Services

Christchurch has driving firmly intrenched as a cultural norm. As at 2018, PT mode share in Greater Christchurch was around 2.3%[27]. Based on Transport Demand Management (TDM) Customer Insight surveys undertaken in May 2019, 69% of the 871 respondents in Christchurch, whose primary mode of transport is car, van or truck, private or company vehicle, have no intention of changing to use alternative means of transport[28].

PT patronage in Greater Chistchurch peaked at 17.2 million trips per year in 2010 before dropping sharply after the earthquakes (Figure). In 2019 there were 13.5 million passenger trips, but as a result of the Covid-19 pandemic reducing demand this dropped to just 11 million passenger trips in 2021[29].

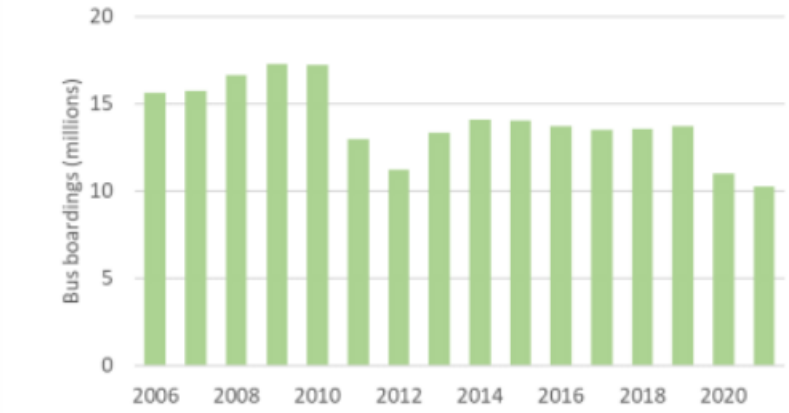


Figure 3-26: PT bus boardings in Greater Christchurch, 2006 -2021[30]

However, Greater Christchurch must achieve greater mode shift changes to ensure the transport network supports anticipated future growth. From 2021 to 2051, the total daily modelled person trips are forecasted to increase by 32%[27]. As demonstrated by Figure , majority of this growth is anticipated to be via private vehicle trips, with private vehicle trips forecast (without any improvement to PT) to comprise 95.1% of all daily trips in Greater Christchurch in 2051 (compared to 2.4% for PT and 2.5% by bike).

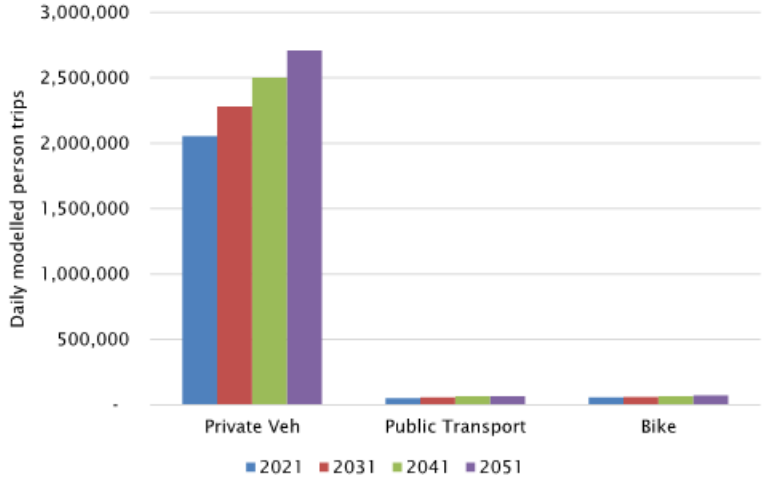


Figure 3-27: Forecasted daily modelled person trips by mode - private vehicle, PT and bike in Greater Christchurch, 2021-2051[27]

Household transport expenditure has increased by 57% since the earthquakes with the median household spending $83 more per week on transport in 2019 than in 2008[31], likely reflecting the more dispersed residential and employment land use pattern.

3.6.4 Transport Policy

3.6.4.1 Government Policy Statement on Land Transport 2021/2022-2030/2031

The Government Policy Statement on Land Transport 2021/2022-2030/2031 (GPS 2021) sets out how funding should be allocated between activities such as road safety policing, state highway improvements, local and regional roads and

[27] QTP (2021). CTM v21 Update: Greater Christchurch Spatial Plan Land Use, 2021
[28] Waka Kotahi (May 2019). Travel Demand Management Customer Insight: Qualitative and Quantitative Insights Summary - All Regions, p.16.
[29] Agenda of Whakawhanake Kāinga Committee - Friday, 13 May 2022 (infocouncil.biz), p. 42
[30] Agenda of Whakawhanake Kāinga Committee - Friday, 13 May 2022 (infocouncil.biz), p. 42
[31] https://www.pwc.co.nz/publications/2019/citiesinstitute/cities-urban-competitivesness-christchurch.pdf

PT, outlining the Government's priorities for the National Land Transport Fund (NLTF). The four strategic priorities of the GPS 2021 are:

- Better travel options:
  - Providing people with better transport options to access social and economic opportunities
  - Seeks to deliver better travel options through the implementation of mode shift plans for key urban areas
- Climate change:
  - Developing a low carbon transport system that supports emission reductions while improving safety and inclusive access
  - Achieving net zero carbon - requires a transition to a low carbon transport system. Measures are in place to reduce transport demand and infrastructure is inter-connected encouraging walking, cycling and the use of PT.
- Safety: Developing a transport system where no-one is killed or seriously injured
- Improving Freight Connections: Improving Freight Connections for economic development

By 2031 the GPS 2021 proposes to deliver the following short to medium term results:

- Improved access to social and economic opportunities;
- PT and active modes are more available and/or accessible;
- Increased share of travel by PT and active modes;
- Reduced greenhouse gas emissions; and
- Reduced air and noise pollution.

Specifically, regarding rapid transit, the GPS-2021 defines rapid transit as a quick frequent, reliable, and high capacity PT service that on a permanent route (road or rail) that is largely separated from other traffic.

It also notes that high capacity and rapid transit systems and multimodal travel options in urban centres will help to manage road congestion and enable efficient flows of people (and products).

3.6.4.2 Canterbury Regional Public Transport Plan 2021-2031

The vision of the Canterbury Regional Public Transport Plan (CRPTP) is to provide innovative and inclusive PT that sits at the heart of the transport network and supports a healthy, thriving, and liveable Greater Christchurch. One of the CRPTP aims is to provide a catalyst for Central City regeneration, and regional housing and business development, by protecting and investing in rapid transit corridors.The 2021-2031 plan places new emphasis on resilience to extreme events and emissions reduction over its predecessors.

3.6.4.3 Mode Shift Plan

For urban areas to thrive, people need to be able to move around easily and have a range of choices for how they get to work, connect with family and friends and access services. Consequently, a modern transport system with a mix of reliable transport options that help keep people and products safely moving, is required. As a result, Waka Kotahi has developed a national mode shift plan 'Keeping Cities Moving'[32] to deliver on social, environmental and economic outcomes by growing the share of travel by PT, walking and cycling (activating a mode shift).

Specific direction for this step change is set out in the Agency's mode shift plan 'Keeping Cities Moving'. Keep Cities Moving was developed to deliver on social, environmental and economic outcomes by growing the share of travel by PT, walking and cycling (activating a mode shift).

The plan outlines 35 interventions that seek to increase the pace of change in cities and ensure that investment is targeted to help provide more transport choice and ultimately reduce car dependency. The plan identifies a need for six area specific mode shift plans to be developed for place-based changes in the six high-growth urban areas with the highest potential to achieve mode shift. Out of this, the Regional Mode Shift Plan Greater Christchurch[33] (GC MSP) was developed by Waka Kotahi and its local partners and endorsed by the Greater Christchurch Partnership in 2020.

Climate change is a key issue and the GC MSP acknowledges that 41% of greenhouse gas (GHG) emissions for Greater Christchurch are attributed to land transport, and that historic land use patterns and investment have resulted in sprawling urban environments as evidenced with the shift of the population to the Selwyn and Waimakariri Districts. Significant investment in transport infrastructure has incentivised private vehicle use over other forms of transport which has made it more difficult to promote other modes like PT. The plan recognises these significant challenges but highlights opportunities where mode shift can be initiated through:

[32] https://www.nzta.govt.nz/assets/resources/keeping-cities-moving/Keeping-cities-moving.pdf

[33] https://www.nzta.govt.nz/assets/resources/keeping-cities-moving/Christchurch-regional-mode-shift-plan.pdf

- Integrated planning and design with urban form and PT to improve its efficiency and attractiveness;
- Promotion, support and provision for sustainable business, housing and public infrastructure that achieves high connectivity;
- Investment in public and active transport to improve its attractiveness; and
- Initiating behavioural change through education, safety initiatives and enabling ease of use.

Initial priorities for the GC MSP over the next three to six years are implementing the short-term improvements to PT identified in this business case, connecting the gaps in the existing cycleway network and encouraging behaviour change (through travel demand management activities). The GC MSP acknowledges that the key drivers for mode shift are environmental and safety concerns, with congestion a secondary consideration. The GC MSP outlines that while congestion is not currently a significant issue in Christchurch (compared to Wellington and Auckland), if current travel patterns are continue then congestion (associated adverse effects such as increased emissions) will increase with the high car usage and growth in demand.

Improving urban mobility is also one of several step changes included in the Waka Kotahi 10-year plan Arataki to address key drivers affecting the land transport system. The step change of transforming urban mobility focuses on addressing the causes of car dependency and growing the share of travel by PT, walking and cycling through:

- Shaping urban form;
- Making shared and active modes more attractive; and
- Influencing travel demand and transport choices.

3.6.4.4 Kaupapa Here Papawaka Central City Parking Policy 2021

CCC adopted a new Central City Parking Policy in August 2021[34]. This seeks to achieve an 85 % occupancy of parking spaces within the central city at peak times, and to support greenhouse reduction targets by supporting parking for sustainable modes. Overall, the policy proposes to manage on-street parking on a case-by-case basis using such measurs as time limits and parking charges.

3.6.5 Covid-19 Impact

Waka Kotahi commissioned research on the projected impacts of the Covid-19 pandemic on the transport system[35]. Early indications were that there will be slower population growth in the key metro areas (Greater Christchurch included) as a result to declines in immigration and internal migration.

The Canterbury regional summary for Arataki Version 2 states:

> *'Canterbury has the third largest tourism spend in the country, of which 40% comes from international visitors. The region will be disproportionately impacted by border closures. Christchurch is forecast to be slightly worse off than the rest of the country because of its role as a gateway for international tourists.'*

It states that supporting multi-modal access to Christchurch central city as the primary activity centre remains a priority. In addition, there will be an ongoing need for transport services to support COVID-19 recovery by improving access to employment and essential services for vulnerable communities.

It also identifies that given the high reliance that Canterbury has on net migration for population growth, the reduction inimmigration is anticipated to slow growth in and around Christchurch. Under the slower recover scenario (the worst-case scenario), employment levels are not forecast to even return to business as usual levels by 2031. The analysis notes that the impacts of the downturn have the potential to be buffered by the scale of the primary sector located in Canterbury.

Despite this impact, no significant changes were expected in the nature, scale and location of transport demand over the medium to long term, although changes to work patterns for professional services had known potential to see a reduction in peak trips to city centre, because of more people working remotely. Overall, the 10-year outlook remains largely unchanged with it noted that the Covid-19 pandemic is a continuously evolving situation and recommendations within this business case are likely best managed through a dynamic approach to staging and an ongoing review process ahead of major investment decisions.

In April 2021, Waka Kotahi reflected on the economic ramifications of Covid for the first year of the pandemic[36]. This noted that overall New Zealand was faring better than expected. It outlined that Canterbury as a tourism and migrant dependent region could continue to be impacted by Covid but that strong job growth was still forecast for the region between 2002 and 2005 contributing to its anticipated economic bounce back.

[34] https://www.ccc.govt.nz/assets/Documents/Transport/Parking/Central-City-Parking-Policy-2021.pdf
[35] https://www.nzta.govt.nz/assets/planning-and-investment/arataki/docs/key-drivers-step-changes-levers-interventions-august-2020.pdf, p. 6

[36] https://www.nzta.govt.nz/assets/planning-and-investment/arataki/docs/arataki-covid-19-economic-projections-update-summary-report-may-2021.pdf

3.6.6 The Evolving Role of Technology

There are emerging technologies in the form of autonomous vehicles, access to travel information and the way people can access or purchase travel and mobility. While many of these remain undefined at this time, there is also uncertainty of the effect these technologies will have on the way people travel and the needs people will have from a service and infrastructure perspective. Waka Kotahi have undertaken research on the latest transport technology and data background information as part of informing Arataki[26] and this is particularly relevant to a greenfield growth area as the urban form and transport dynamics may be influenced by these factors. For example:

- Mobility-as-a-service (MaaS) is enabled by smartphone technology and uses apps to allow a person to plan, book and pay for end to end journeys. It provides people with better real-time information on transport options, including the ability to purchase and pre-purchase mobility options tying together different modes of travel for single journeys. This can influence ridership patterns and access needs and has the potential to encourage mode shift and reduce congestion. It is seen as having high potential to serve fist mile/last mile options to link with PT offerings
- On-Demand Transport: When On-Demand Transport is provided for PT it can improve accessibility and reduce the number of single occupancy vehicles. It can improve access to PT in areas not serviced by a traditional PT model due to a lack of demand for a large-scale operation. Waka Kotahi note:

  On-demand transport may provide a more sustainable public transport service in places where at certain times, demand peaks and is predictable, but at other times, demand is inconsistent or low.

  Currently MyWay is an on-demand PT service being used in Timaru (it uses minibuses that carry about 12 people and through advance bookings coordinates passengers heading in the same direction).

Further examples of future mobility technologies that may be relevant include:

- Autonomous private vehicles may affect arrival modes at stations, requiring less park and ride space and greater drop off space, or improve the efficiency of the motorway corridor and improving overall transport conditions. There are still numerous uncertainties on the role that automated vehicles will have in the future of the transport network and many regulatory and technology issues to overcome
- Autonomous PT vehicles may increase throughput and efficiency of bus rapid transit operation (recognising that many rail systems are already operating in this mode) or provide first and last-mile transport options and influence ridership as well as interchange and supporting corridor design
- Connected vehicle technologies enable vehicles to communicate with each other, infrastructure and road users using wireless communications which can enable efficiencies to be optimised within the transport network
- Advanced bus technologies, as referred to in the Waka Kotahi Advanced Bus Study, would enhance the ability to deliver greater reliability and capacity through reduced dwell times, higher capacities and greater control over operations. These technologies include contactless ticketing, off board ticket validation, all door boarding, along with the use of extra-long double-articulated buses

Overall, this IBC for MRT anticipates that these evolving technologies may have the potential to have a significant effect on PT patterns or behaviour given the focus on the longer term horizon.

3.7 OTHER RELEVANT LAND USE AND TRANSPORT PROJECTS AND INITIATIVES

Table 3-2 is a high-level summary of other projects underway by the Project partners that are of relevance to this business case.

Table 3-2: High Level Summary of Additional Relevant Projects

Project	Relevancy to this IBC
CRPS Airport Noise Review	ECan are currently reviewing revised airport noise contours received from Christchurch International Airport as part of a review of the CRPS[37]. The review is anticipated to be completed by the end of 2022 and has the potential to impact land intensification opportunities within Christchurch. At the time of writing public consultation on the GCSP is being conducted and includes the noise contours.

[37] Council reviews airport noise contours | Environment Canterbury (ecan.govt.nz)

Te Kaha 'Canterbury Multi-Use Arena) Associated Upgrades	As part of the construction of Te Kaha, several street upgrades are proposed in the vicinity of the Arena (particulary at key intersections on Tuam Street, Barbadoes and Madras Street. In addition, changes are proposed to the Lichfield Street, High Street and Manchester Street Intersection to provide improved pedestrian access between the bus exchange and the arena. Any MRT corridor that runs through the central city should be mindful of these upgrades.
Salisbury and Kilmore Street Upgrades to 2-Way	Both Salisbury Street and Kilmore Streets are proposed to be modified from 1-way streets to 2-way streets as part of the original Accessible City Plan. Kilmore Street will provide for PT provision and Salisbury Street is to provide for cycling. These upgrades are accounted for in the CCC 2021-2031 Long Term Plan. As part of this, CCC are proposing to cul-de-sac Salisbury Street to create a shared space west of Victoria Street, with a new signalised crossing established to provide improved access to Hagley Park (and a new footbridge established over the Avon River). Any MRT street running central city alignment needs to be mindful of these alterations.
CCC Tree and Urban Forest Plan	CCC are preparing a Tree and Urban Forest Plan[38] that provides a long term vision and strategy to maximise the health and sustainability of the city's urban trees and forests and the benefits we receive from them. Broadly it seeks to provide enhanced canopy cover within all Christchurch City Council land parcels (including roads). This is relevant to any street running MRT given the challenge of providing vegetation within the already narrow corridors.
Christchurch Suburban Area Plans	CCC staff are developing bespoke area plans for key areas across the city where integration of land use, urban design, transport and environmental matters can reflect aspirations for the future at a local level as part of the Ōtautahi Christchurch Plan. Locations for these plans are currently being identified and may include Papanui, Hornby and Merivale (subject to Executive Team and Councillor approval). Prioritisation and associated resourcing and funding of these plans is yet to be confirmed.

3.8 ENVIRONMENTAL CONTEXT

3.8.1 Emissions and Climate Change

The New Zealand Government are committed to reducing emissions and preparing for the opportunities and challenges presented by climate change. On 1 December 2020, the New Zealand government declared a climate emergency and announced their commitment to urgent action for reducing emissions. This followed a series of actions aimed at mitigating greenhouse gas emissions and adapting to climate change including commitment to decarbonise the public sector by 2025 and passing the Climate Change Response (Zero Carbon) Amendment Act 2019 which sets the target of New Zealand having net zero greenhouse gas emissions by 2050, excluding biogenic methane.

3.8.1.1 Te hau mārohi ki anamata: Towards a productive, sustainable and inclusive economy – Aotearoa New Zealand's First Emissions Reduction Plan

Te hau mārohi ki anamata, the first Emissions Reduction Plan (the ERP) was published in May 2022 as New Zealand's first emissions reduction plan. It is the first statutory plan, under the Climate Change Response Act and sets out the path towards meeting Aotearoa's long-term climate targets. It is a key step in transitioning to a low emissions future. The plan has a considerable focus on reducing transport emissions through transport related interventions that will reduce the quantum of vehicle kilometres travelled (VKT) and encouraging short trips (those 5km or less) to be undertaken by PT or active travel. It seeks a 20% reduction in VKT by 2035 (i.e. a 20% reduction in VKT compared to what would otherwise be expected in 2035 without intervention).

[38] https://www.ccc.govt.nz/environment/trees-and-vegetation/tree-and-urban-forest-plan/

It outlines that the major action in the following years relating to the transport sector will include increasing access to electric vehicles (EVs), beginning the process of decarbonising heavy transport and freight and helping more people to walk, cycle and take PT.

Chapter 10 of the plan specifically relates to the Transport sector, which it acknowledges is responsible for 17% of New Zealand's gross emissions. Key transport actions identified in the plan include:

- Reduce reliance on cars and support people to walk, cycle, and use PT including by;
  - improving the reach, frequency and quality of PT and making it more affordable for low-income New Zealanders;
  - increasing support for walking and cycling, including initiatives to increase the use of e-bikes; and
  - ensuring safer streets and well-planned urban areas.
- Rapidly adopt low-emissions vehicles including by;
  - continuing to incentivise the uptake of low- and zero-emissions vehicles through the Clean Vehicle Discount scheme and consider the future of the road user charge exemption for light electric vehicles beyond 2024; and
  - increasing access to low- and zero-emissions vehicles for low-income households by supporting social leasing schemes and trialling an equity-oriented vehicle scrap-and-replace scheme improving EV-charging infrastructure across Aotearoa to ensure that all New Zealanders can charge when they need to.
- Begin work now to decarbonise heavy transport and freight including by;
  - providing funding to support the freight sector to purchase zero- and low-emissions trucks;
  - requiring only zero-emissions PT buses to be purchased by 2025; and
  - supporting the uptake of low-carbon liquid fuels by implementing a sustainable aviation fuel mandate and a sustainable biofuels obligation.

3.8.1.2 He Pou a Rangi / Climate Change Commission Draft Report

On 31 January 2021, the He Pou a Rangi (the Climate Change Commission) released its Draft Advice for Consultation. The purpose of which is to identify policy necessary to put New Zealand on a "pathway to quickly, significantly and permanently reduce greenhouse gas emissions", and achieve the targets already agreed to. Within the transport section the report identifies that New Zealand needs to almost completely decarbonise land transport including a transition to electric light vehicles and a changes to how travels occurs (i.e. mode type, distance and frequency of travel). The report assumes that by implementing change in travel behaviour total household vehicle travel can remain relatively flat (Figure) despite a growing population. Such changes assumed are:

the average household travel distance per person can be reduced by around 7% by 2030, for example through more compact urban form and encouraging remote working; and *that the share of this distance travelled by walking, cycling and public transport can be increased by 25%, 95% and 120% respectively by 2030*

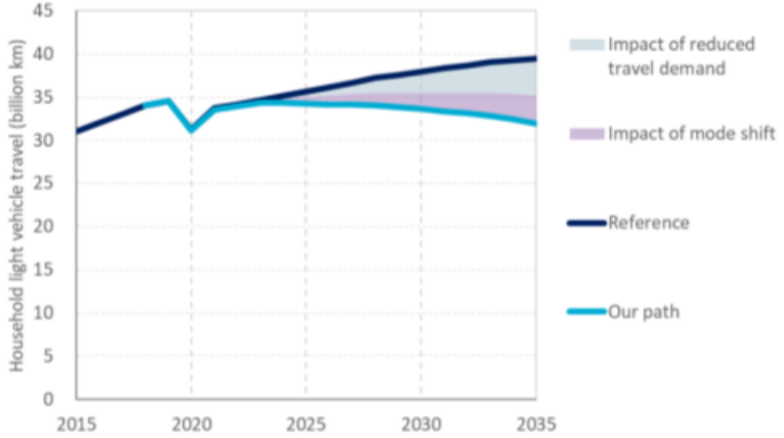


Figure 3-28: Potential Future Household Light Vehicle Travel[39]

3.8.1.3 Local Commitment to Climate Change

At a local level both ECan and CCC declared a climate emergency in May 2019, and CCC has set a target for Christchurch to achieve net zero greenhouse gas emissions, excluding methane, by 2045.

[39] 31 January 2021 Draft Advice for Consultation, Cimate Change Commission, Figure 3.11, p. 59

As part of the role of 'Greater Christchurch 2050' an aspiration for carbon emission reduction will be set for Greater Christchurch which will also identify key strategic moves to support transition.

As part of the climate emergency declaration, ECan have committed to robustly and visibly incorporate climate change considerations into Council work programmes and decisions; provide strong local government leadership in the face of climate change, including working with regional partners to ensure a collaborative response; advocate strongly for greater Central Government leadership and action on climate change and lead by example in monitoring and reducing Council's greenhouse gas emissions.

ECan have recently renegotiated its PT contracts, which has accelerated the move to new, low-emission buses[40]. This is projected to reduce the CO2 emissions by 14% within their first year with the introduction of 25 new electric buses and 39 new low-emission Euro 6 buses. This has been incorporated into the Do Minimum scenario.

3.8.2 Social and Recreation

Within Greater Christchurch there are a number of key recreational areas including Hagley Park (the extensive 165 hectares centrally located open space heart of Christchurch city), the Port Hills (numerous walking and cycling tracks, Banks Peninsula, Waterways, the Beach and Coast (including the Christchurch Coastal Pathway), the Adventure Park, the foothills near Oxford, and numerous plains and wetlands (I.e. Bottle Lake, Spencer Park, The Groynes, Riccarton Bush and Travis Wetland). There are also a several key community recreational centres such as the Rolleston Community Centre, the Selwyn Aquatic Centre and the Kaiapoi Aquatic Centre.

Two additional key recreational facilities proposed for the future are the Parakiore Christchurch Metro Sports Facility (large aquatic and indoor recreation and leisure venue set to open early 2023 in the Central City) and the Te Kaha Canterbury Multi Use Arena (set to open mid 2025).

3.8.3 Geology

The geology of Greater Christchurch comprises a range of conditions.

Christchurch city is located at the coast of the Canterbury Plains, next to the extinct volcanic complex forming Banks Peninsula. Christchurch was mainly swamp, "behind beach dune sand, and estuaries and lagoons, which have now been drained. Two rivers—the Avon and Heathcote which originate from springs in western Christchurch, meander through the city and form the main drainage system"[41].

The Waimakariri River is a large braided river located north of Christchurch, and directly south of Kaiapoi that flows from the mountains, across the Canterbury Plains to the sea. It is from the alluvial flows from the Southern Alps to the Pacific Coast that the Canterbury Plains are built.

Greater Christchurch enjoys some of best drinking water in New Zealand and the world. To the west and north of Christchurch City is a groundwater recharge area for the series of aquifers under Christchurch City – underground water fed from the Waimakariri River.

In terms of natural disasters, Greater Christchurch is vulnerable to flooding, earthquakes and tsunami.

3.8.4 Vegetation

The natural vegetation of Christchurch is primarily swampland plants (flax and rushes), drier grasslands with shrubby vegetation (kanuka, matagouri, ribbonwood and cabbage trees) and patches of true forest, dominated by kahikatea[42].

A large quantity of land on the outskirts of Christchurch City, and within the Selwyn and Waimakariri Districts is used for rural purposes.

3.8.5 Coastal Environment

Key coastal areas in Greater Christchurch are the Akaroa and Lyttleton Harbour in Banks Peninsula, the Avon-Heathcote Estuary (Ihuatai), the Southshore Sand Spit, and the beach (Sumner, New Brighton and Pines Beach.

3.8.6 Terrestrial and Freshwater environment

Key habitat areas in Greater Christchurch include the Avon-Heathcote Estuary, Riccarton Bush, the Travis Wetlands and many areas around Banks Peninsula, such as Mt. Herbert.

[40] https://www.ecan.govt.nz/your-region/your-environment/climate-change/our-environmental-contribution/
[41] L. J. Brown, R. D. Beetham, B. R. Paterson, J. H. Weeber; Geology of Christchurch, New Zealand. Environmental and Engineering Geoscience; I (4): 427-488
[42] https://www.ccc.govt.nz/assets/Documents/Culture-Community/Heritage/ChristchurchCityContextualHistoryOverviewFull-docs.pdf, p. 9

Greater Christchurch is home to around 400 native plants including 31 species on the nationally threatened plant list. Local natives include the Spotted Skink, Pied Cormorant, Wrybill, Tuna (eel) and Red Admiral Butterfly[43].

The land area of Selwyn District is predominantly rural, interspersed with many small townships. Most of the land in the District has been modified by people's activities, but there are sites and areas that have significant natural or ecological values. Most of these sites are in the less densely settled parts of the Rural zone. Rivers or streams also run through or adjoin townships.

3.8.7 Summary

Several key national strategies and directions have emphasised the impotant consdierations of emissions and climate change in future transport decisions.

In addition, if not appropriately managed, parts of the study area's environment may be subject to potential adverse effects resulting from any future proposed works.

Further environmental assessments specific to the recommended option will be required during the pre-implementation phase to support any future Notice of Requirement (NoR) and/or resource consent applications.

3.9 ECONOMIC AND EMPLOYMENT CONTEXT

3.9.1 Christchurch's Economy

The value of economic output in Greater Christchurch reached around $28.65 billion in 2018, representing 10.1% of New Zealand's nominal gross domestic product. Greater Christchurch's economic success is therefore considered to be not just of critical importance to the Canterbury region and South Island but New Zealand as a whole.

Christchurch Airport received a record 6.93 million passengers in the 2019 financial year, with operating revenue growing 44.2% in the past five years, to $187.4 million[44]. Meanwhile, Lyttelton Port handled 437,413 containers in the 2019 financial year, up 2.9% on 2018 financial year levels[45]. Both are forecast to grow as the population increases which in turn will drive growth in demand for the movement of both people and goods.

The movement of freight plays a critical role for Greater Christchurch's economy in ensuring that goods reach both domestic and international markets. Road freight provides a flexible and dependable mode for freight operators and receivers. The estimated volume and value of freight moved through Greater Christchurch via road was $18.9 billion in 2014 - 31.6% of the total value of freight[46]. It is crucial that Christchurch's strategic road network supports the movement of freight in and around Greater Christchurch.

Journey time reliability has been identified as a key problem impacting not only on private vehicle trips and PT, but also road freight trips. Network congestion and delays on key freight routes and access points impact on the movement of goods and the economic performance of Greater Christchurch. The development of a more efficient and effective PT network would likely release road capacity, assuming it attracts a significant modal transfer. This would have downstream benefits for freight trips on key corridors.

In 2015 the top 5 industries in Greater Christchurch based on employee numbers were in order of greatest employee numbers: Construction (26,800 employees), Health/Social Care, Manufacturing, Retail Trade and Professional, Scientific and Technical Services[47]. Employees in Construction had more than doubled between 2006 and 2015, reflecting the rise in this industry as part of the rebuild.

[43] https://www.greaterchristchurch.org.nz/background/background-2007/trends/environment
[44] Christchurch Airport (2019). Retrieved 24 March 2020, from https://www.christchurchairport.co.nz/about-us/who-we-are/facts-and-figures/
[45] Lyttelton Port Company (2019). Annual Report 2019, p.11.
[46] Greater Christchurch Partnership (2014). Greater Christchurch Freight Study: Freight Management Directions Statement
[47] Rockefeller Foundation and Greater Christchurch Strategic Partners (2016). Resilient Greater Christchurch, p.18

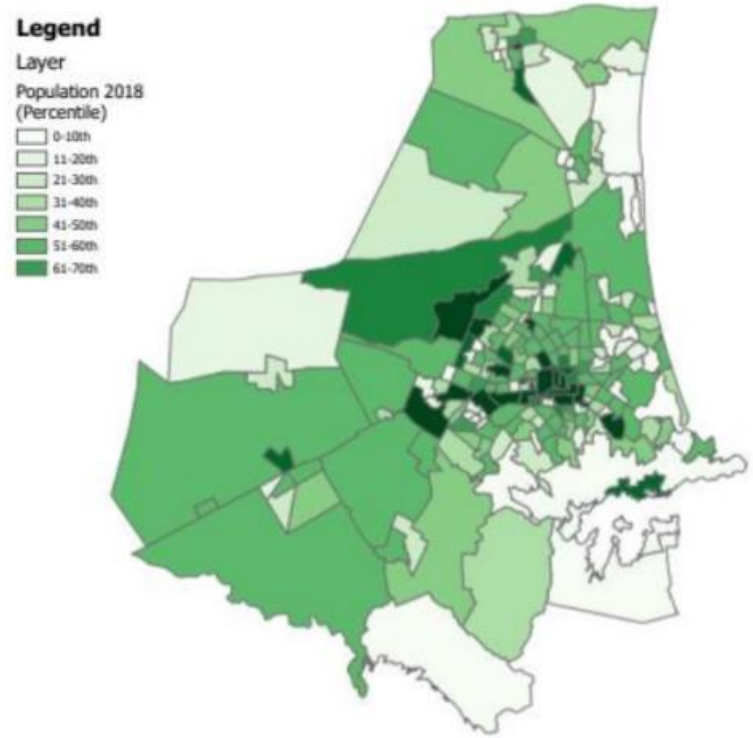


Figure 3-29: Employment Distribution in Greater Christchurch in 2020[48]

The 2018 Census shows that the Christchurch central city is bouncing back after the 2010/2011 earthquakes, with more than 11,000 additional workers in the central city than at the time of the 2013 Census. This can also be demonstrated by the employment distribution shown in Figure . Whilst more recent census data is not yet available (the next census is scheduled for 2023), the CTM Sector 2021 data estimates that as of 2021 the number of people employed in the centre of the city had increased to 45,124[49].

3.9.2 Future Employment Growth and Distribution

Employment is forecasted to grow by approximately 47% between 2021 and 2051, from 244,450 to 359,068 (Figure)[59]. In total, an additional 114,618 employment opportunities are projected by 2051, with most of these (71%) within Christchurch City. This will create additional demands for land and floorspace, and opportunities to concentrate new development around PT.

It is noted the number of workers to households; and jobs to households is indicated to decline over time (smaller household sizes and aging population).



Figure 3-30: Forecasted employment growth in Christchurch City, Waimakariri District and Selwyn District, 2021-2051[50]

By 2051, employment is forecasted to be concentrated predominantly in the Christchurch Central City (22% of total jobs), the southern industrial belt (i.e. Addington, Blenheim Road and Hornby), with smaller concentrations also in Rolleston and Rangiora, as shown in Figure .

[48] Greater Christchurch Foundations Report April 2022 , p.31
[49] , CTM Sector 2021 data

[50] QTP (2021). CTM v21 Update: Greater Christchurch Spatial Plan Land Use, 2021

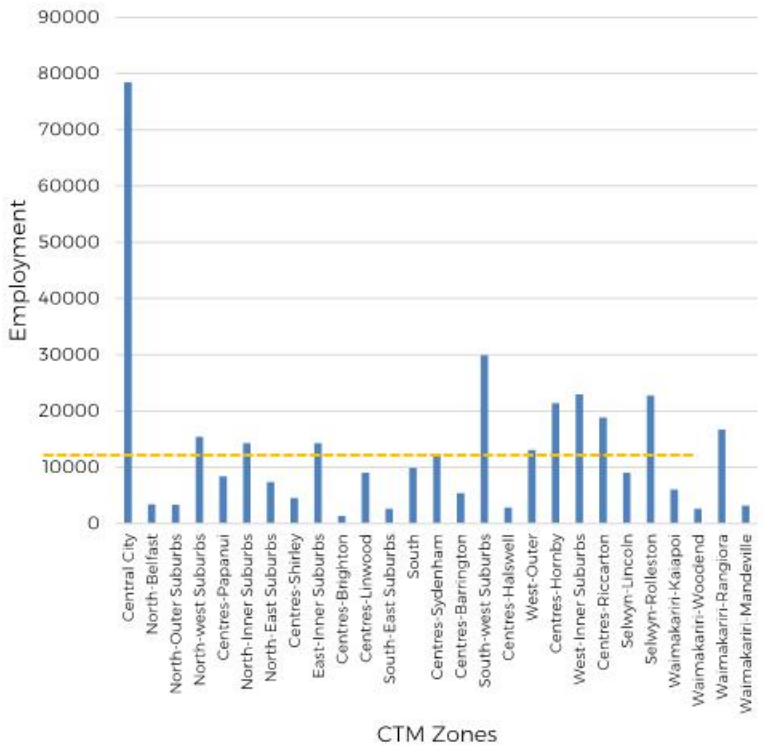


Figure 3-31: Total Employment by CTM Sector by 2051 in Greater Christchurch

Just eight of the CTM sectors will employ more than 15,000 people by 2051 (Central City, North-West Suburbs, South-West Suburbs, Hornby Centre, West Inner Suburbs, Riccarton Centre, Selwyn-Rolleston and Waimakariri - Rangiora) (refer to Figure).

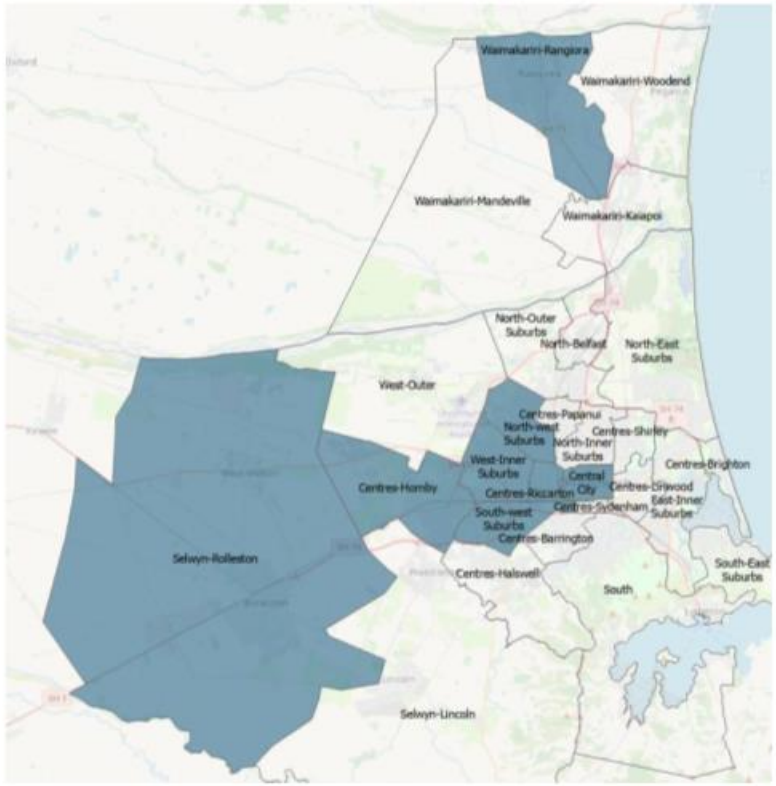


Figure 3-32: CTM Zones with more than 15,000 Employment Opportunities by 2051 (shaded blue)

When considering employment areas by CTM Zone (finer grain detail than the sectors above), the top 15 areas of greater employment in 2051 are outlined in Table below.

Some areas are forecast to lose employment as dispersed activities return to the central city as it is progressively rebuilt. Hospital Corner is expected be the area with the highest employment in 2051. However, the area around Rolleston Town Centre is anticipated to experience the most growth in employment between 2031 and 2051 with an increase of over 6,000 employees.

Table 3-3: Forecast employment growth by CTM zone[51]

Area	CTM Zone	Employment Total per CTM Zone				Description
		2031	2041	2051	Diff 2031 to 2051	
Hospital Corner	66	10329	12964	15360	5032	Hospital Corner
Central City	61	3934	5543	7005	3071	ANZ Centre / The Crossing
Airport and Surrounds	288	5940	6338	6701	761	Sir William Pickering Drive
Selwyn-Rolleston	364	1226	3177	4836	6345	Rolleston Town Centre
Central City	62	4127	5123	6030	1903	The Terraces / Cashel Street
Airport and Surrounds	284	5178	5502	5802	624	Airport
South-west Suburbs	183	3077	3962	4820	5600	Christchurch Arena / Addington Raceway
Waimakariri-Rangiora	6	1751	3865	4644	5359	Rangiora Centre
Waimakariri-Rangiora	1	1701	3470	4443	5328	Southbrook / Lineside Road
Central City	58	2173	3646	4985	2812	New Regent St / Performing Arts Precinct
Selwyn	359	1801	3349	4169	4914	Izone Business Park
Blenheim Road South	220	4051	4250	4435	384	Parkhouse Rd / Treffers Rd
Hornby	242	3742	3983	4206	463	Buchanans Rd / Waterloo Rd
Riccarton	256	3306	3749	4152	846	Westfield Riccarton
University of Canterbury	272	3148	3477	3775	628	UC Campus

3.9.3 Key Activity Centres (KACs) and Key Destinations

There is an ongoing focus on new commercial growth and development within the Central City and KACs, of which there are eight across the Christchurch City (Belfast, New Brighton, Shirley, Linwood, Papanui, Riccarton, Spreydon, Halswell and Hornby), three in Waimakariri (Rangiora, Woodend/Pegasus and Kaiapoi) and two in Selwyn (Lincoln and Rolleston). These centres, as set out in the CRPS and Our Space are identified as focal points for employment (including offices), but also community activities and the transport network and which are suitable for more intensive mixed-use development.

Beyond the Central City, the Riccarton, Papanui/Northlands and Hornby KACs are the top three highest suburban employment generators with between 2,000 and 4,500 employees and offer a good range of social, community, hospitality and indoor recreation venues, with each having a Shopping Mall as a key anchor.

In addition to the Central City and KACs, it is evident from the total employment figures that there are several other key areas or destinations which represent significant employment clusters and where access to PT should be maximised. These include:

- Christchurch Hospital
- Christchurch Airport and surrounds
- Blenheim Road industry
- Wider Hornby area and
- University of Canterbury

3.9.4 Christchurch Economic Development Strategy 2017

The Christchurch Economic Development Strategy 2017 (CEDS), Is owned by the Christchurch City Council and identifies strategic priorities and projects to contribute to economic growth for Christchurch City to 2031. It builds on the recent economic trends which have included the demolition of over 1,300 buildings in the central city post-earthquake, a low unemployment rate (the lowest in New Zealand 2013-2017) (Figure)), and the completion of a substantial volume of infrastructure works[51]. The strategy predicts that by 2031 there will be 73,500 job vacancies that will not be filled by natural population growth due to an aging population.

The CEDS identifies the key actions as being vital for future prosperity:

[51] Christchurch Economic Development Strategy, 2017, p.6.

- The creation an attractive city for people, business, investments and visitors;
- The need to realise the potential of Canterbury's rural economy
- A maximisation of the commercial value of innovation
- To regenerate the Central City to ensure a connected, engaging and thriving city; and
- Improve experts, commercialisation and the flow of people, ideas, investment and intellect into Christchurch.



Figure 3-33: Unemployment Rate (actual quarterly rate)[52]

3.9.5 Affordability

Currently Christchurch does not have wage parity with other New Zealand cities (the median weekly earning in Canterbury was $921 in 2017 compared to $983 in Auckland (6.5% more) and $1007 in Wellington (9.4% more))[53]. Despite this the cost of living in Christchurch in 2017 was 12% cheaper than Auckland and 1.7% cheaper than Wellington.

Christchurch also has a median house price lower than the national median house price. Despite this, house prices in Christchurch increased by 48% in the two years to December 2021 (Figure), with similar increases experienced in Selwyn and Waimakariri[54].

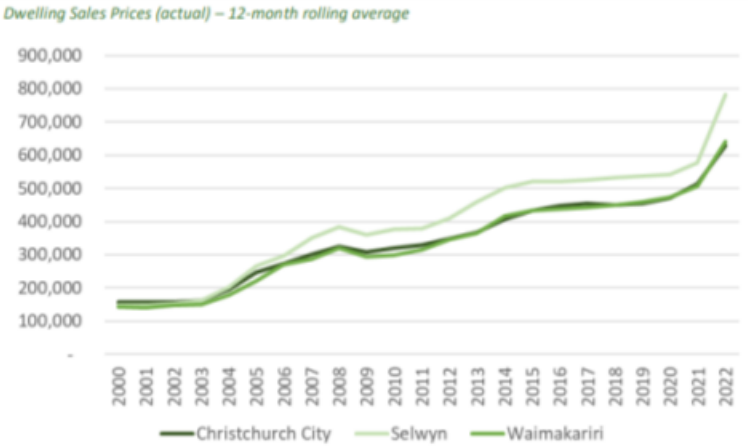


Figure 3-34: Rising House Prices in Greater Christchurch[55]

In addition, since the turn of the century Christchurch incomes have been rising faster than most of New Zealand with real income growth averaging 1.4 per cent since 2000, almost twice as high as Auckland. Median household income in Christchurch was just 87 per cent of Auckland in 2000, and in 2019 the two cities were almost equal[56].

The 16th Annual Demographia International Housing Affordability Survey 2020 which rates middle-income housing affordability in Australia, Canada, Hong Kong, Ireland, Japan, New Zealand, Singapore, the United Kingdom and the United States. Christchurch is the most affordable of the three largest cities in New Zealand (Figure), although this has been decining in recent years (Figure). In addition, to Auckland and Wellington, the study also considers affordability in Dunedin, Hamilton, Napier-Hastings, Palmerston North, and Tauranga. Christchurch remains the most affordable of urban environments considered for housing based on the median house price and median household income ratio.

[52] https://dpmc.govt.nz/sites/default/files/2017-07/monitoring-greater-christchurch-regeneration-june-2017-report.pdf, p. 12
[53] Christchurch Economic Development Strategy 2017, p. 11
[54] Agenda of Whakawhanake Kāinga Committee - Friday, 13 May 2022 (infocouncil.biz), p.37
[55] Agenda of Whakawhanake Kāinga Committee - Friday, 13 May 2022 (infocouncil.biz), p.37
[56] https://www.pwc.co.nz/publications/2019/citiesinstitute/cities-urban-competitivesness-christchurch.pdf

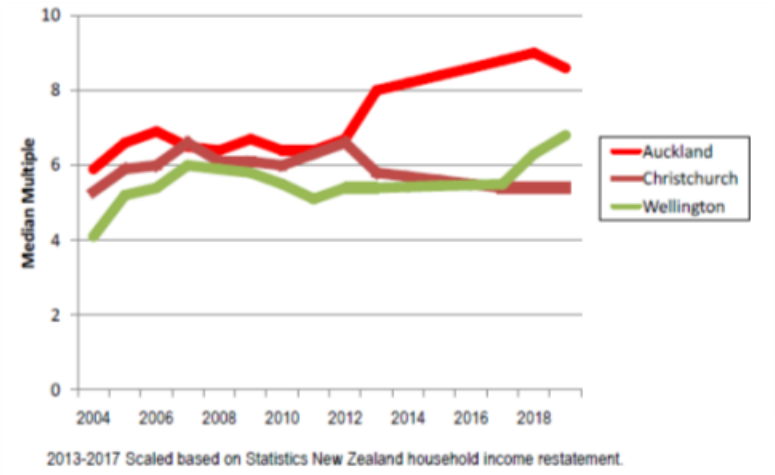


Figure 3-35: New Zealand Middle Income Housing Affordability 2004-2019[57]

Rents in Greater Christchurch have increased faster than incomes over the last two decades; and in the same period house prices have increased 3.4 times faster than incomes in Selwyn, 2.7 times faster in Christchurch City and 2.2 times faster in Waimakariri.Over 10,200 households had social or other housing needs in Greater Christchurch in 2020, with 93% of these households being in Christchurch City[58].

3.10 POPULATION AND DEMOGRAPHIC CONTEXT

3.10.1 Future Population Growth and Distribution

As New Zealand's second-largest and one of the fastest growing regions, Greater Christchurch's 2021 population of 499,000 is projected to grow to over 655,000 by 2051, as illustrated in Figure [59]. This equates to a population growth rate of around 31% and translates to approximately 64,000 new households in Greater Christchurch by 2051.

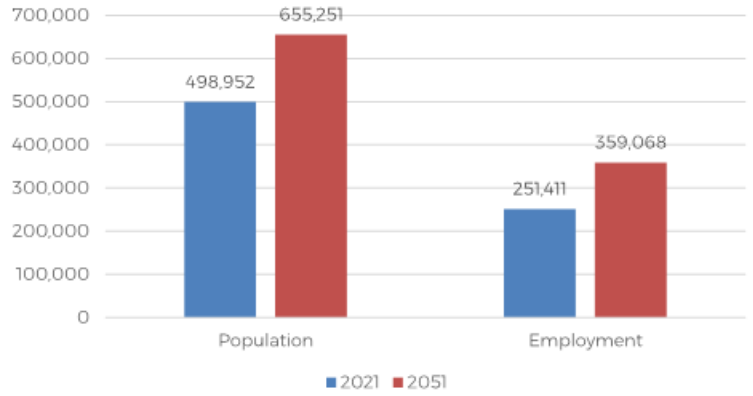


Figure 3-36: Forecasted growth in Greater Christchurch, 2021-2051[59]

44% of all population growth is anticipated to occur in Christchurch City, 36% in Selwyn and 20% in Waimakariri (Figure)[60]. This growth will inevitably increase travel demand in Greater Christchurch.

The population in Christchurch City is projected to grow by around 70,000 (18%) between 2021 to 2051. The Waimakariri District is projected to grow by around 33,000 (65%), while the Selwyn District is projected to grow by around 57,000 (108%)[59] during the same period.

[57] 16th Annual Demographia International Housing Affordability Survey 2020, Figure 10, p. 22
[58] Agenda of Whakawhanake Kāinga Committee - Friday, 13 May 2022 (infocouncil.biz), p.37

[59] QTP (2021). CTM v21 Update: Greater Christchurch Spatial Plan Land Use, 2021
[60] Greater Christchurch Partnership (2019). Our Space 2018-2048: Greater Christchurch Settlement Pattern Update, p.11.

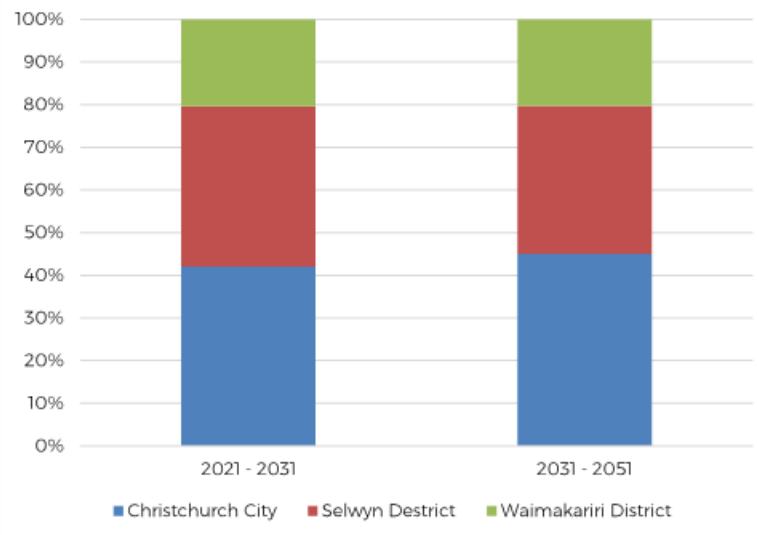


Figure 3-37: Forecasted distribution of population growth in Greater Christchurch, 2021-2051[61]

Residential growth is forecasted to comprise a mixture of greenfield growth on the Christchurch City fringe and intensification in the existing urban area. Figure shows that by 2051 residential growth in the Selwyn-Rolleston Zone will become the most populous zone in the region. Nine zones will have more than 30,000 people by 2051 (shown in Figure and Figure) and four zones will have more than 40,000 people by 2051 (these are North-East Suburbs, West-Inner Suburbs, Selwyn/Lincoln and Selwyn/Rolleston).

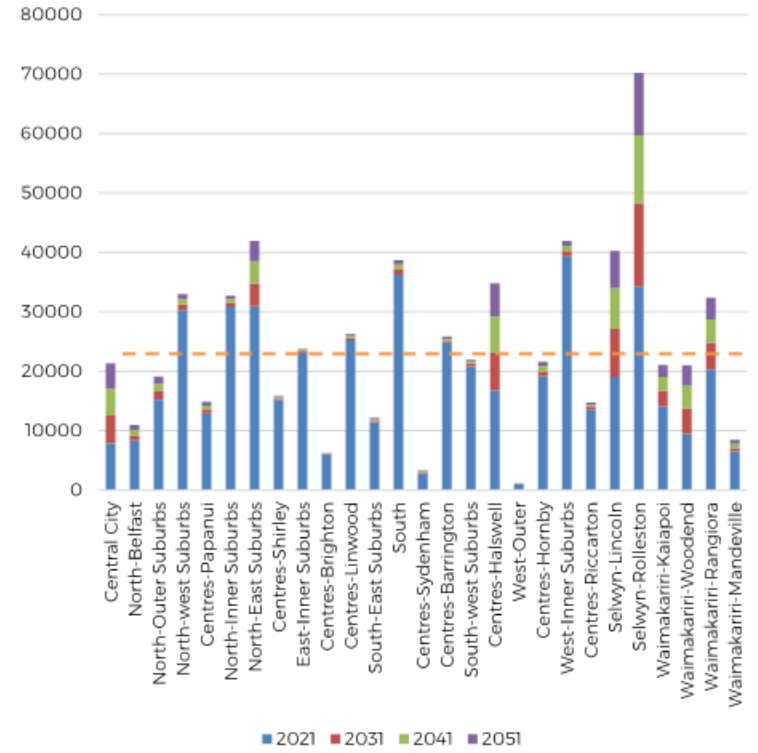


Figure 3-38: Population Growth per Decade 2021-2051 by CTM Zone in Greater Christchurch

[61] Greater Christchurch Partnership (2019). Our Space 2018-2048: Greater Christchurch Settlement Pattern Update, p.23.

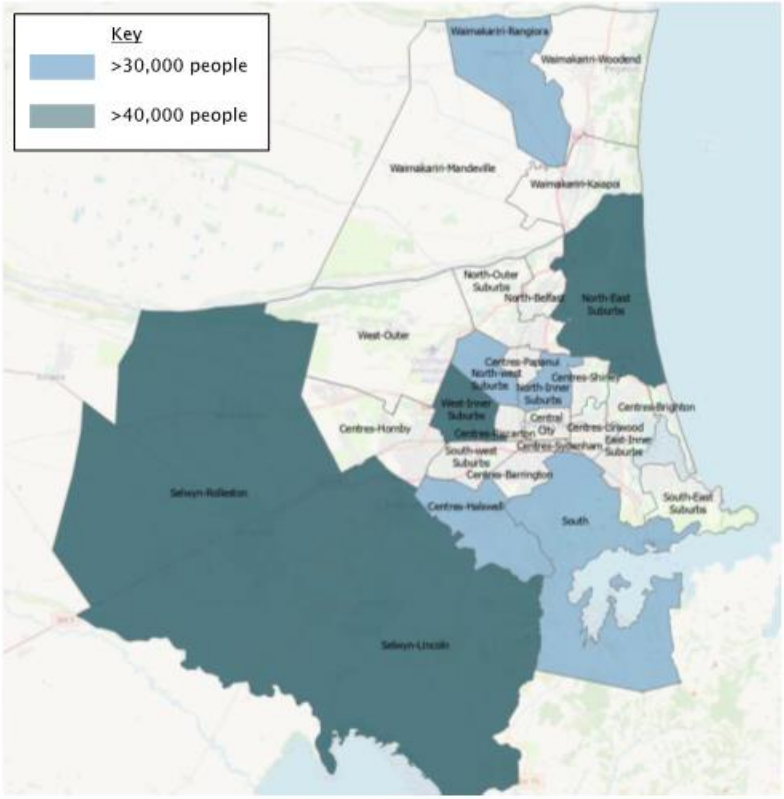


Figure 3-39: CTM Zones that will be most populous by 2051

The areas that will experience the most growth between 2021 and 2051 are Selwyn-Rolleston, Selwyn-Lincoln, Centres-Halswell, and Central City, as shown in Figure .

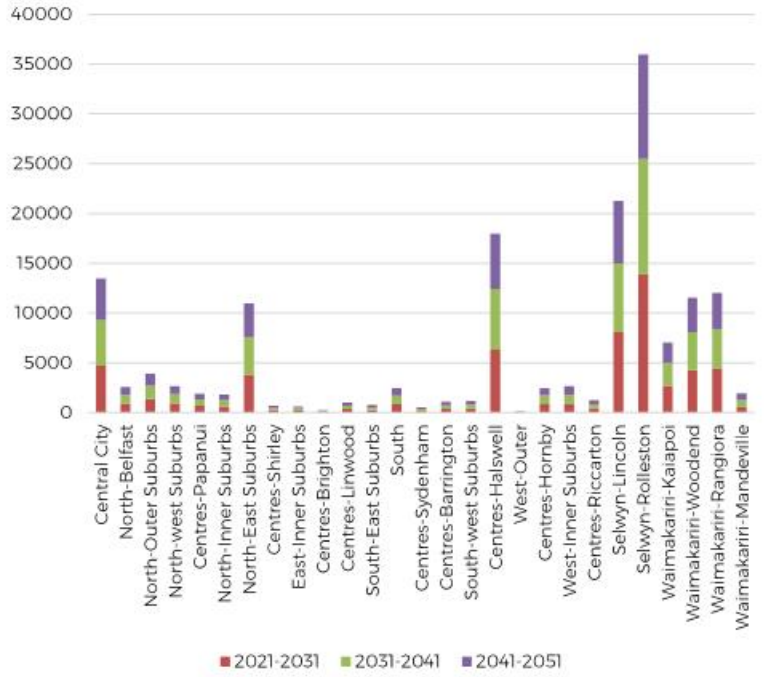


Figure 3-40: Growth in Population by CTM Zone by decade 2021-2051

3.10.2 Growth Challenges

3.10.2.1 Ageing Population

Across New Zealand and in Greater Christchurch the population is ageing as the proportion of those over 65 years grows (Figure). The population structure is expected to continue to change. From 2018 to 2043 across Greater Christchurch, the percentage of people aged 65 years and over is projected to increase from around 16% of the population to 24%[62]. People aged 65 years and over typically have fewer mode choice options but are currently eligible for free

[62] Statistics New Zealand (2017). Subnational population projections 2013-2043 - Population by broad age group. Retrieved 28 February 2020, from https://figure.nz/table/jVx2x7BNjE3Tta9Z

PT during all off-peak Metro bus services. An ageing population has implications for the future of the city with additional pressure anticipated to be placed on health, social care, changing housing and transport needs and a reduction in knowledge and skills in the economy that will only be replaced by migration.

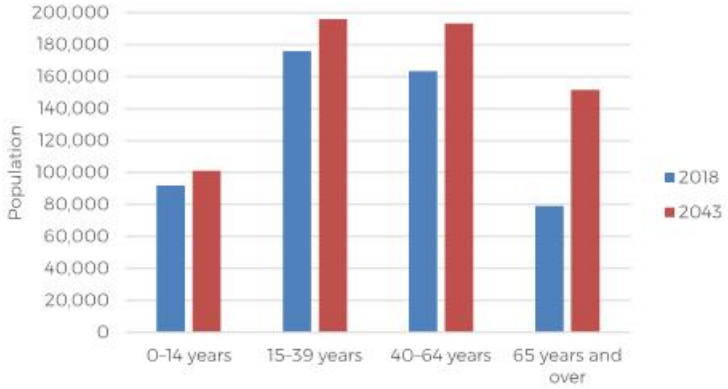


Figure 3-41: Greater Christchurch Population by age group, 2018-2043[63]

3.10.2.2 Deprivation

The New Zealand Index of Multiple Deprivation (IMD) is a set of tools for identifying concentrations of deprivation in New Zealand. Maps of the weighted mean New Zealand IMD values for Greater Christchurch in 2018. This demonstrates that there is a spatial element to deprivation in greater Christchurch with those areas most deprived (values 9 and 10) are located mainly to the east and south-west of the City, while areas with the lowest deprivation (with values 9 and 10) are located on and around the Port Hills and in large parts of the north-west of Christchurch City (Figure).

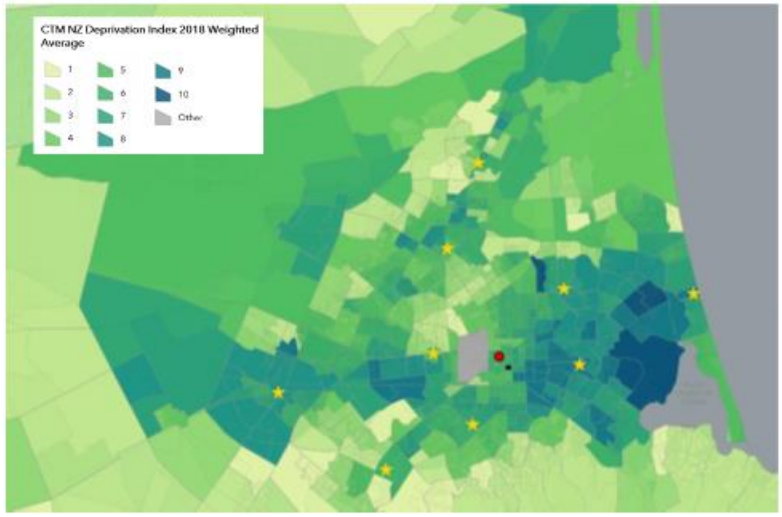


Figure 3-42: Weighted mean New Zealand Index of Deprivation value by CTM Model Zone - Christchurch City, 2018

The most deprived areas in the Waimakariri District (with values 8 to 10) are in a part of central Rangiora, Kairaki Beach/Pines Beach, and a part of eastern Kaiapoi. Areas of least deprivation (with values 1 and 2) include West Eyreton and Ohoka.

In the Selwyn District, a large proportion of the population live in areas of low deprivation values (1 and 2), including Rolleston, West Melton and Prebbleton[64]. There are no areas of high deprivation (with values 9 and 10) in the District.

3.10.3 Community Aspirations – 'Share an Idea'

Following the earthquakes, the Christchurch City Council conducted a public consultation exercise in which local citizens were invited to share their vision for a rebuilt Christchurch city. Titled 'Share an Idea', the campaign was a ground up way of asking and acknowledging what the community wished to see in the future of their city. Overall, 100,000 ideas were received[65].

[63] Statistics New Zealand (2017). Subnational population projections 2013-2043 - Population by broad age group. Retrieved 28 February 2020, from https://figure.nz/table/jVx2x7BNjE3Tta9Z
[64] Department of Public Health, University of Otago, Wellington (2018). NZDep2018 Statistical Area 1 (SA1) data.

[65] Christchurch City Council. (2011a). Central City Plan: Draft Central City Recovery Plan For Ministerial Approval December 2011: Technical Appendices 1 of 3. Christchurch: Christchurch City, p. 5.

The council identified key linking statements to do with common themes amongst the ideas. One recurring statement was that of

> *Interconnectivity made easy and enjoyable between activities, such as shopping and socialising and the streetscape, and between different locations across the Central City. Integrated affordable transport networks with pedestrians as the priority and including a range of options such as walkways, cycleways and public transport that moves people easily into and around the Central City*

This highlights that a range of transport choice is desired by the community (within 2214 comments received relating to transport modes). Other key themes were the desire for a car free Central City, that has a focus on a pedestrian-centred environment, and for a clean green city.

4 STRATEGIC CASE (ACTIVITY)

4.1 INVESTMENT LOGIC MAP AND PROBLEM STATEMENTS

4.1.1 Investment Logic Map (ILM), Problem Statements and Benefits

The key element of developing the strategic case is securing a consensus amongst investment partners and stakeholders to confirm the Problem Statements, Benefits, and Investment Objectives.

Several workshops were held (two at WSP on 8 and 22 July and the third virtually on 12 August 2020) with representatives from Waka Kotahi, CCC, ECan, SDC, WDC and Christchurch 2050 to develop a series of Problem Statements for the MRT IBC that built on the work previously undertaken in the Foundations and Rest of Network Indicative Business Case (IBC) and presented in the programme business case.

Based on the outcomes of the workshop and post-workshop dialogue between participants and the facilitator, the ILM was developed as follows:

Following the initial workshop which focused on the problem definition there were three key themes identified:

- Prosperity/economy
- Urban form/liveability/community and
- Climate change/environment

Following an additional workshop and email correspondence with representatives, four Problem Statements were developed focusing on:

- Accessibility to the Central City
- Improving travel choice and access to opportunities between Christchurch and growing outer urban areas
- Land Use patterns and transport investment to enable density and critical mass in key locations/transport corridors and



Figure 4-1: MRT Workshop 2 - 22 July 2020

- A perpetuation of high car dependence contributing to worsening environmental outcomes

The four draft problem statements identified (superseded) were:

Problem Statement 1- Continuation of future growth patterns and travel demands will constrain efficient transport choices for access to Christchurch's Central City, impacting accessibility to jobs and markets, restricting Greater Christchurch's economic potential and threatening future investment (25%)

Problem Statement 2 - A lack of a viable, competitive public transport between Christchurch and growing outer urban areas will result in poor travel choices and access to opportunities (25%)

Problem Statement 3 - Misaligned incentives and signals for land use and transport investment, including provision of access will not enable density and critical mass in key prioritised locations and transport corridors in Greater Christchurch, resulting in a failure to achieve a liveable, vibrant city (25%)

Problem Statement 4 - A perpetuation of high car dependence will continue a low mode share for public transport resulting in worsening emissions and environmental outcomes (25%)

Following a series of meetings and workshops with the Greater Christchurch Partnership Committee in the second half of 2020 (11 September 2020 Committee Workshop, 6 November 2020 meeting and 11 December 2020 meeting), a revised set of problem statements were formerly adopted 11 December 2020 which include more explicit reference to the Greater Christchurch partnership climate change responsibilities. The problem statements have been reduced to three, with abbreviated versions provided for conciseness.

The detailed agreed ILM is attached in Appendix A – Investment Logic Map.

4.1.2 The Problems

Three problem statements have been identified:

Problem Statement 1: Current and forecast residential and business settlement patterns perpetuate high car dependence with more people expected to drive long distances, resulting in increased transport costs to users and the wider community, and a continuation of the low mode share for PT (33%).

Problem Statement 2: The PT system is not sufficiently attractive (in terms of travel time, reliability, convenience, comfort and cost) to encourage its use in preference to private vehicles, resulting in a continuation of the low mode share for PT and higher congestion, which will constrain access to the central city and other key destinations, increase public and private transport costs and restrict economic growth (33%).

Problem Statement 3: As Greater Christchurch grows, a continuation of the current transport system is not sustainable, and fails our climate change mitigation and adaption responsibilities. Higher vehicle use will result in higher levels of embedded carbon, higher greenhouse gas and particulate emissions, and poorer public health outcomes (33%).

These are abbreviated as follows:

PS1: Current and forecast settlement patterns perpetuate high car dependence, resulting in increased transport costs

PS2: The PT system is not sufficiently attractive to compete with private vehicles

PS3: Continuation of the current transport system will fail our climate change responsibilities and lead to poorer public health outcomes

The supporting evidence for each of these problem statements is provided below.

4.2 STATUS OF THE EVIDENCE BASE

The evidence base in support of the problems is strong with the accessibility within Christchurch and travel choice anticipated to be greatly restricted going forward.

A transport model (referred to as the CTM/CAST v21 model) forms a basis of a lot of the evidence provided below. The model enables outputs for future planning years (2041 and 2051) and is used to quantify growth in transport demands. The base population and land use projections (and associated transport modelling) that underpins the modelling undertaken was developed by the Greater Christchurch Partnership (GPC) at the Territorial Local Authority (TLA) level, within the UDS boundary area, in 2021.

These projections/forecasts are reasonably consistent with Statistics NZ (sub-national) population forecasts released in 2017; when applying the Medium Growth projection within Christchurch City and the Medium-High projection to both Waimakariri and Selwyn Districts.

Representatives from each TLA worked with QTP Ltd (who were updating the CTM and CAST regional transport models) to allocate the projected population and employment to Meshblock level (with CCC using its own internally developed land use modelling process). The resulting updated population/land use projections and transport model update are collectively referred to as the CTM/CAST v21 update (referring to the 2021 year that this update was made).

The assumptions made in the CTM/CAST v21 model are outlined in Appendix C – Greater Christchurch Spatial Plan Land Use Summary.

4.2.1 Problem Statement 1 – Current and forecast settlement patterns perpetuate high car dependence, resulting in increased transport costs

Current and forecast residential and business settlement patterns perpetuate high car dependence with more people expected to drive long distances, resulting in increased transport costs to users and the wider community, and a continuation of the low mode share for PT

4.2.1.1 High Car Dependency

New Zealand cities typically have a high level of car dependency[66] and Christchurch is no exception, with trips by car comprising 83% of total trip legs in Christchurch (as shown by Figure earlier). In contrast, in the same period Wellington had just 68% of total trip legs made by the car.

The 2018 Census data emphasised this further demonstrating that in 2018, 76.1% of people used a car as their main means of travel to work in Christchurch (3% greater than the national average of 73%[67]) (Figure).

Further a Ministry of Transport Travel Analysis Report released in 2018 showed that "Christchurch residents each spend an average of 221 hours behind the wheel every year, compared with just 10 hours on PT – against the 187 hours driving and 25 hours on PT in Auckland and 134 hours and 34 hours respectively in Wellington"[68].

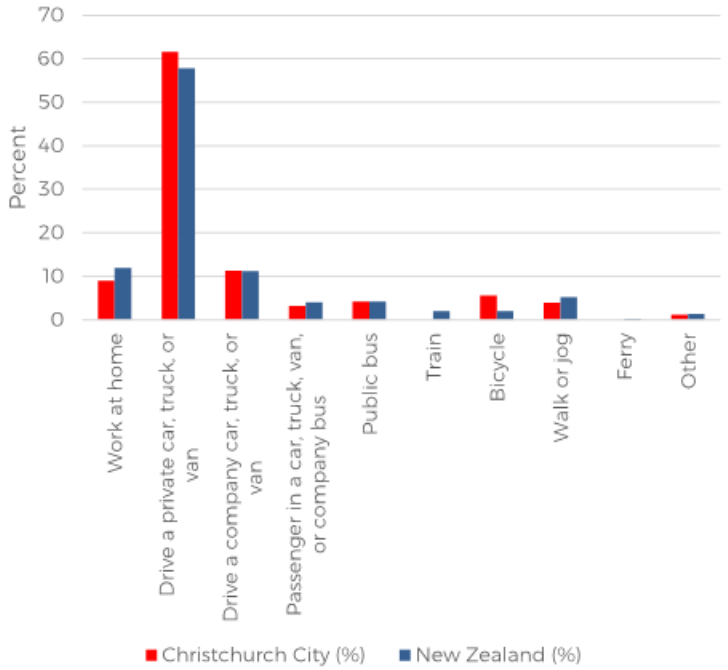


Figure 4-2: Main Means of Travel to Work in Christchurch City and New Zealand - 2018

The high car dependency in Christchurch is also demonstrated by the high levels of car ownership in Canterbury in 2015 compared to the national average (Figure).

[66] https://www.nzta.govt.nz/assets/resources/keeping-cities-moving/Keeping-cities-moving.pdf , p. 6
[67] https://www.stats.govt.nz/tools/2018-census-place-summaries/christchurch-city#transport
[68] https://www.stuff.co.nz/national/100313398/christchurch-the-countrys-car-capital-as-residents-shun-buses

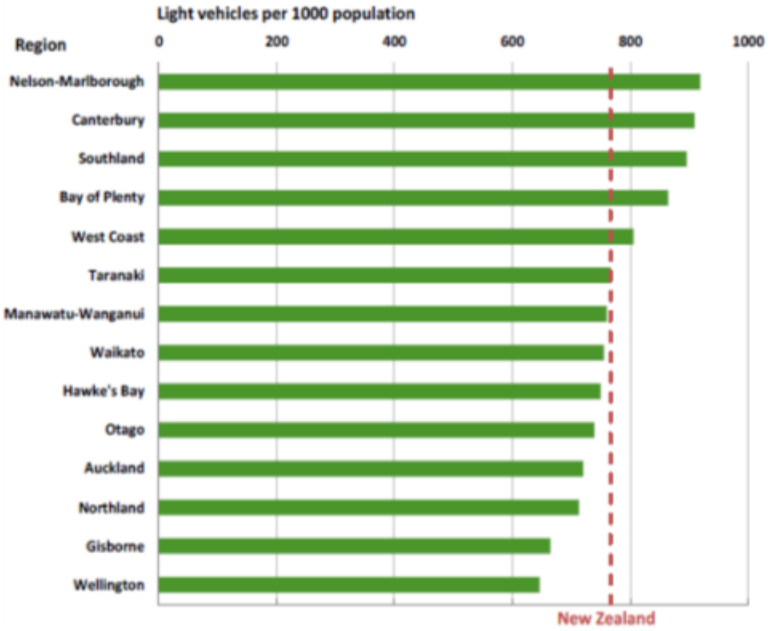


Figure 4-3: Number of light vehicles per 1000 population in New Zealand, by region, 2015[69]

4.2.1.2 Low PT Mode Share

Related to this high car dependency, PT patronage per capita in Greater Christchurch is relatively low compared to Auckland and Greater Wellington. On average, each Wellingtonian makes 74 trips on PT per year, around 2.8 times more than those in Greater Christchurch.

4.2.1.3 The Relationship between Settlement Patterns and Accessibility

Cities that promote a higher density of development experience several benefits particularly in relation to accessibility. Waka Kotahi 'Keeping Cities Moving' outlines the importance of urban form (or settlement patterns) in reducing high car dependency:

> *"Encouraging good quality, compact, mixed-use urban development will result in densities that can support rapid/frequent transit (and vice versa); shorter trips between home and work/education/ leisure; and safe, healthy and attractive urban environments to encourage more walking and cycling"*[70]

It adds that cities which thrive are those where people can move round with ease and have a range of travel choices for getting to work and education, to connect with family and friends and for accessing services.

Further the UK Urban Task Force[71] outlines there is a sound case for greater urban density:

> *"research has shown that real land economy gains are being achieved from increasing densities... [H]igher densities allow a greater number of public amenities and transport facilities to be located within walking distance, thus reducing the need for the car, and contributing to urban sustainability".*

Research has found that low urban density is related to high car dependency. In addition, lower density cities are typically associated with increased average trip lengths which in combination with high levels of private car usage, causes more greenhouse gas emissions (Figure)[72].

[69] https://www.ehinz.ac.nz/assets/Factsheets/Released-2017/EHI8-9-NumberOfVehiclesInNZ2000-2015-release-201701.pdf, p.3
[70] https://www.nzta.govt.nz/assets/resources/keeping-cities-moving/Keeping-cities-moving.pdf, p.19
[71] UK Urban Task Force (1999)
[72] http://spinlab.vu.nl/wp-content/uploads/2016/09/Research_Project_Lara_Engelfriet.pdf, p.2

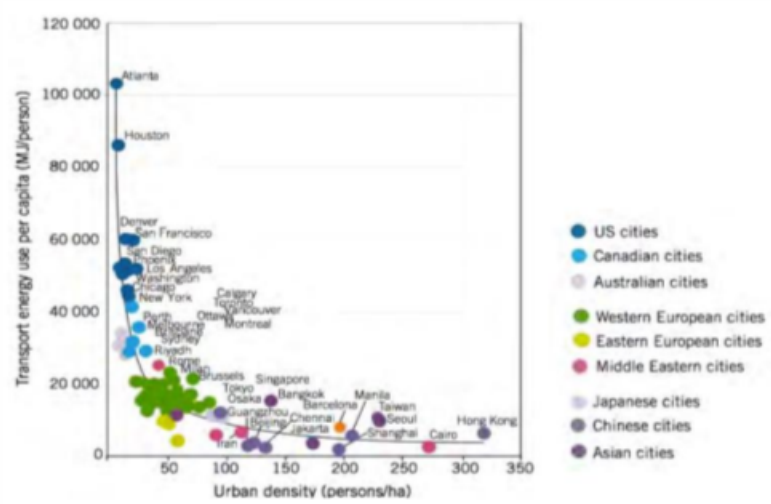


Figure 4-4: Relationship between Urban Density and Transport Energy Use (2011, WHO)[73]

MFE[74] also outline that higher density development in urban areas can result in:

- Cost savings in land, infrastructure and energy;
- Reduction in economic costs of time spent travelling;
- A concentration of knowledge and innovative activity in the core of the city;
- Lower crime and greater safety;
- A reduction in runoff from vehicles to water, and emissions to the air and atmosphere (though air emissions may be more locally concentrated); and
- Help encourage greater physical activity, with consequent health benefits promote social connectedness and vitality.

Denser living also specifically helps support mode shift and reduce worsening environmental outcomes associated with high car dependency (see Section 4.2.1.4).

4.2.1.4 Current Land Development Patterns

The Greater Christchurch Mode Shift Plan outlines that "past land use and transport investment decisions have encouraged high levels of private car use with consequentially low uptake of PT"[75]. Historic low density subdivision comprising 'cul-de-sacs and circuitous streets' built away from PT routes, and amenities that could be accessed on foot has reinforced dependency on the private vehicle.

While Christchurch is not shown in Figure 45, based on an average household size of 2.4 people per household[76], Christchurch generally falls somewhere between 25 and 45 persons per hectare (assuming a household per hectare density of between 10 and 20). The current target of 10-15 households per hectare for all new residential greenfield development set in the Canterbury Regional Policy Statement (CRPS) (Policy 6.3.7) would equate to an approximate urban density between 24 and 36 persons per hectare.

The CRPS target for intensification within Christchurch City is to achieve an average of 50 household units per hectare for intensification development within the Central City (120 persons per hectare) and 30 household units per hectare for intensification development elsewhere (72 persons per hectare).

Our Space proposes that future housing demand will be met by redevelopment of existing urban areas of Christchurch City (45%) and by existing greenfield areas within Greater Christchurch (36%). Just 19% of future housing demand will be met by new greenfield and redevelopment areas in Selwyn and Waimakariri. It identifies the need for additional land in Rolleston, Rangiora and Kaiapoi to meet medium term capacity needs.

As of 2017, monitoring of the Land Use Recovery Plan (LURP) suggested that actual intensification in Greater Christchurch was broadly running at around half of the desired targets. New urban development areas within all three Council areas were identified as being serviced by the substantial upgrade to the capacities of the northern, western, and southern corridors (CSM2 and CNC)[77].

More recently, there have been some improvements in density at localised infill (refer to Figure earlier) in Christchurch City with residential development

[73] http://spinlab.vu.nl/wp-content/uploads/2016/09/Research_Project_Lara_Engelfriet.pdf, Figure 1. p.3).
[74] MFE, Value of Urban Design (June 2005)
[75] https://www.nzta.govt.nz/assets/resources/keeping-cities-moving/Christchurch-regional-mode-shift-plan.pdf, p.4
[76] https://ccc.govt.nz/assets/Documents/Culture-Community/Stats-and-facts-on-Christchurch/fact-packs/FactPack2016.pdf, p.6
[77] https://www.greaterchristchurch.org.nz/assets/Documents/greaterchristchurch/Our-Space-consultation/UDS-Settlement-Pattern-Review-Outcomes-and-Challenges-briefing-paper.pdf p.15

starting to trend away from low density housing stock in the form of greenfield development towards redevelopment and intensification of existing urban areas as supported by the Christchurch District Plan and Our Space. For example, in 2019/2020 60% of net new residential building consents in Christchurch City were Intensification/ Infill.

However, the majority of building consents issued between July 2018 and July 2020 across Greater Christchurch for residential dwellings still demonstrates that the large majority of new residential units consented are houses located in outlying suburbs as opposed to townhouses/flats or apartments located within more centrally located areas (Figure).

Figure demonstrates that residential densities within areas within the central city and to the immediate north (i.e. Richmond/Edgeware) are starting to achieve 40 to 50 households per hectare (hh/ha). However outside of the Central City and immediate fringe (excluding isolated pockets associated with the Riccarton KAC, University of Canterbury, and Sydenham) remain at average residential densities between 10 and 20 households per hectare. The outer suburbs (including the hill suburbs) remain lower than 10 households per hectare. Of note there are no notable corridors of greater density visible in the 2018 density map. Overall, as at 2021 Christchurch continues to present as a low-density city and the majority of the city is at a density of less than 20 hh/ha (a population density of fewer than 25 people per hectare is generally considered 'low density'[78]).

When considering projected development to 2051, provides a direct comparison of anticipated residential densities[79]. This demonstrates increased areas achieving average residential densities between 40-50 hh/ha in the central city fringe and to the immediate south-east and north of the central city along with Addington, pockets of Sydenham and the immediate area surrounding the Riccarton KAC. In addition, many other areas start to achieve a residential density of 30 hh/ha. To the north-west of the (i.e. areas of Fendalton, Bryndwr, Avonhead, and Burnside residential densities are projected to remain low).

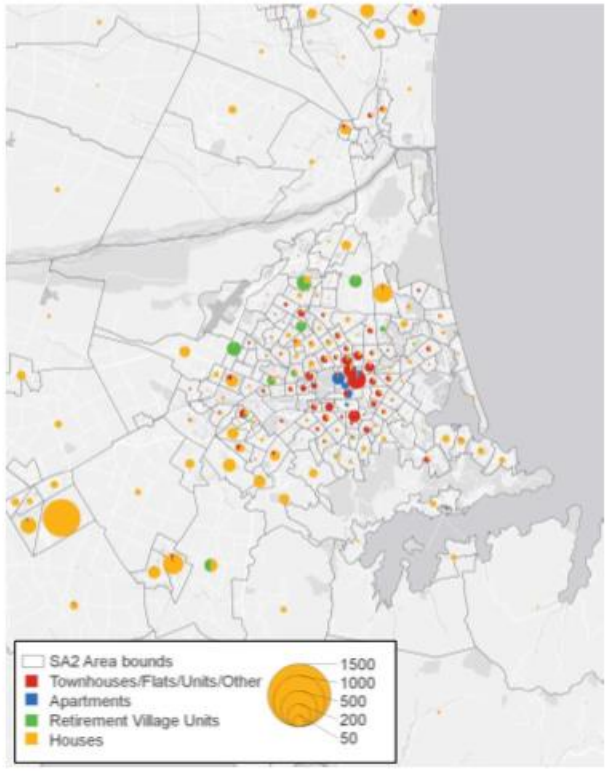


Figure 4-5: Number and type of residential dwellings granted building consent between July 2018 and July 2020 in Greater Christchurch

[78] https://www.greaterauckland.org.nz/wp-content/uploads/2009/06/thesis.pdf

[79] Additional 2018 and 2048 comparison maps are provided at Appendix F - 2021 and 2051 Residential Densities and Key Employment and Tertiary Area Maps demonstrating residential density and employment / tertiary density for Greater Christchurch.

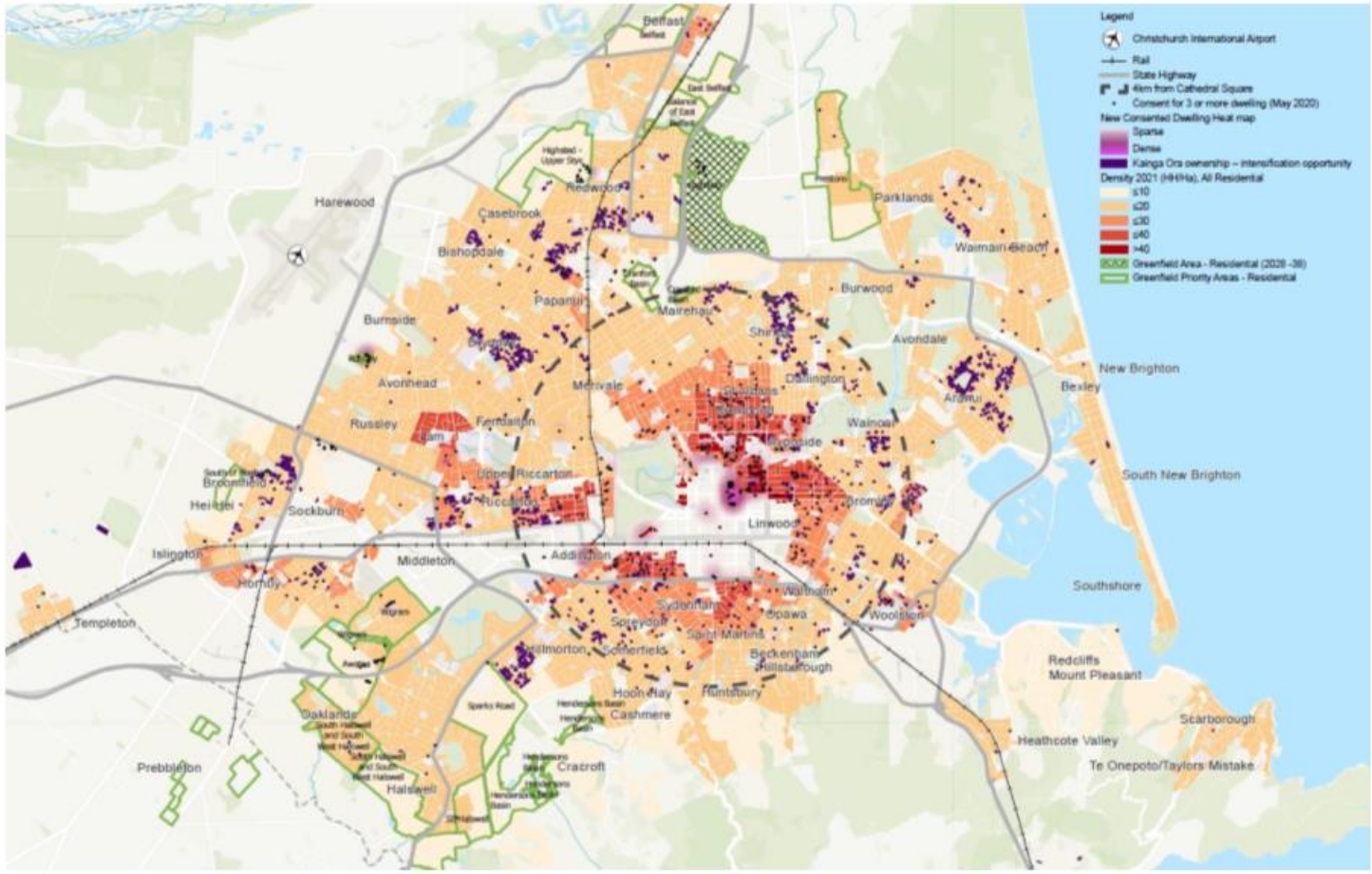


Figure 4-6: Greater Christchurch Residential Density as at 2021

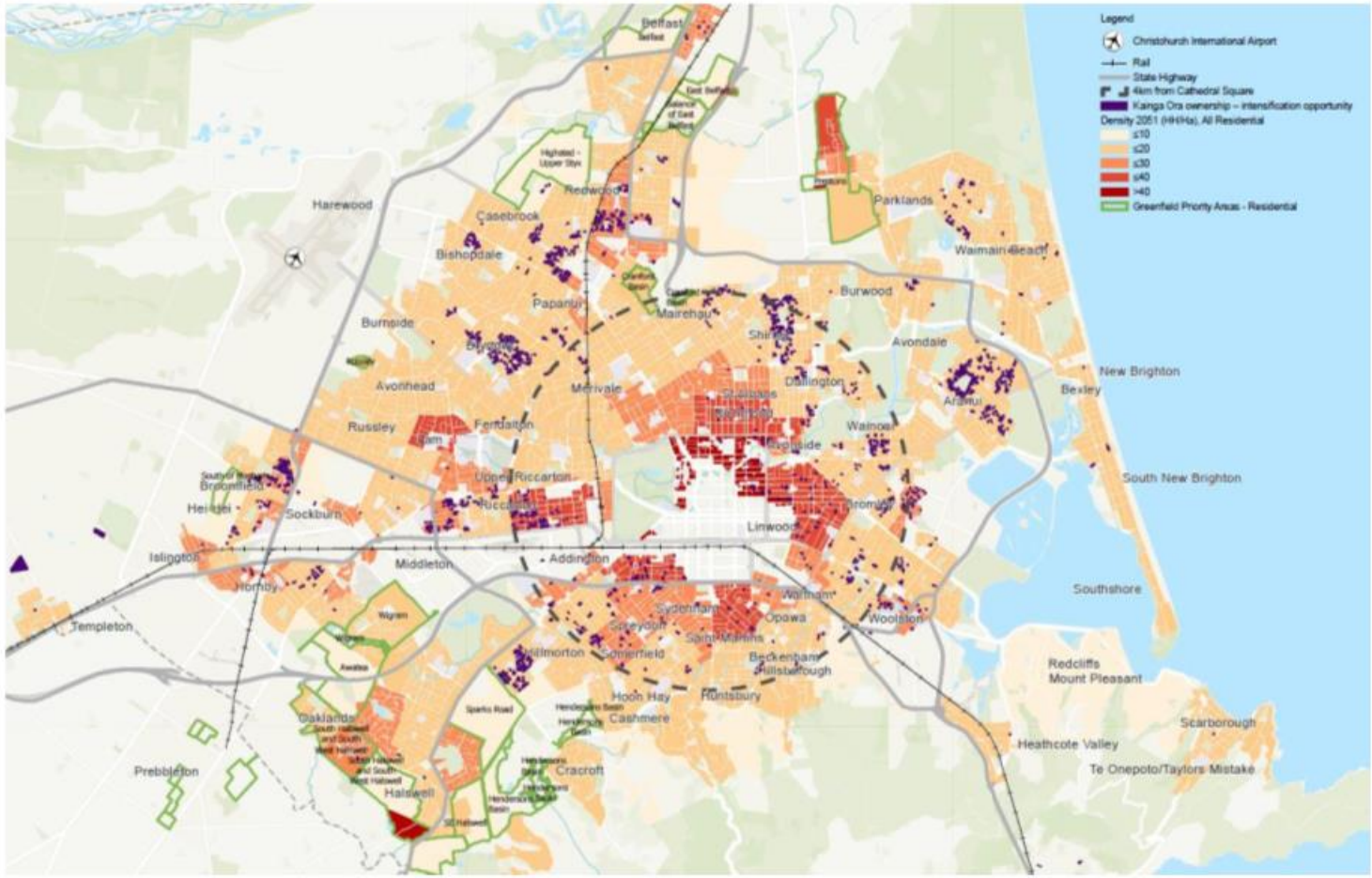


Figure 4-7: Christchurch Projected Residential Density 2051

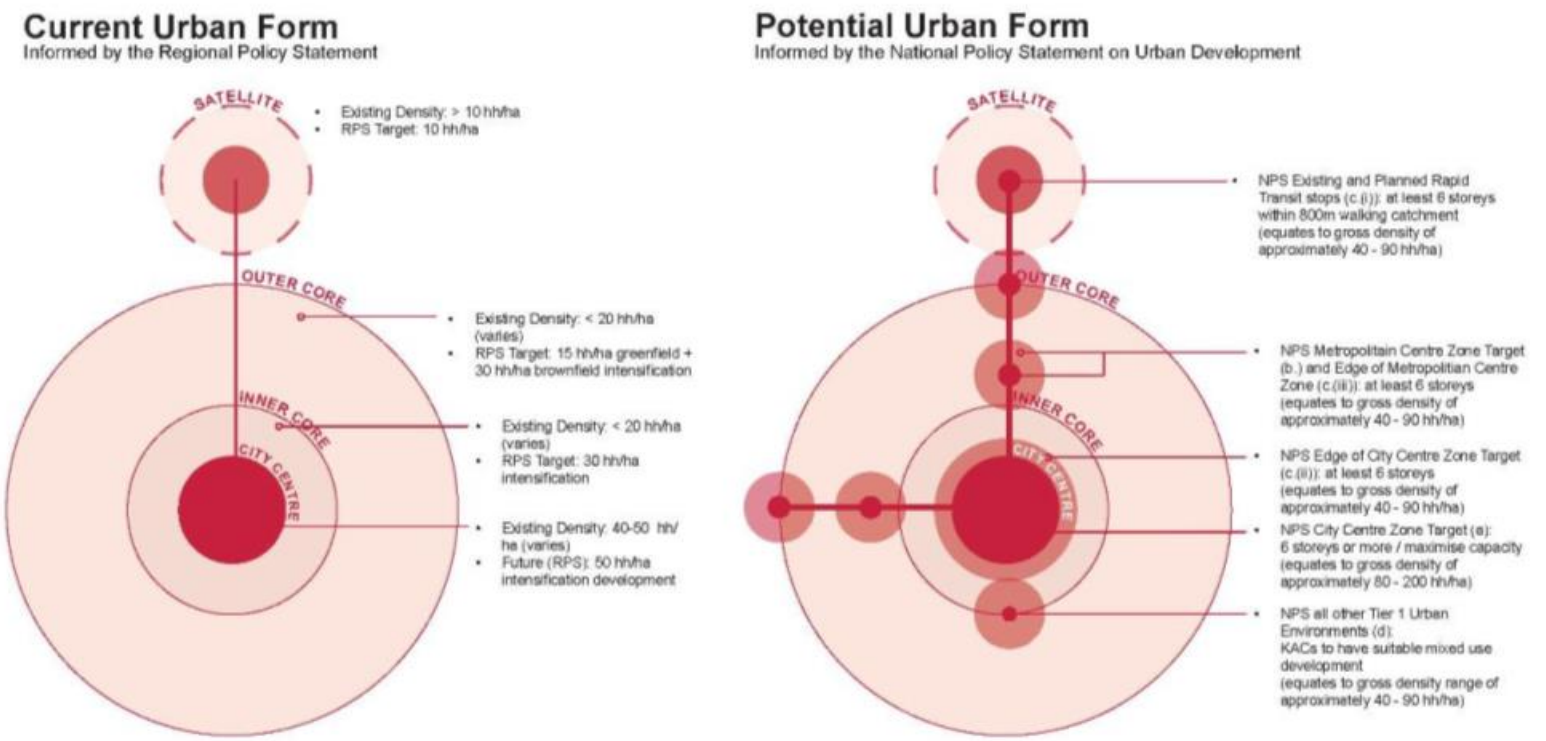


Figure 4-8: Current and Potential Urban Form across Greater Christchurch

Figure compares the current densities in Greater Christchurch with those targets anticipated in response to the new directions for greater density in the NPS-UD. It demonstrates that currently while Greater Christchurch is achieving average densities broadly consistent with targets in the RPS, the new NPS-UD directs that substantial density increases are required over that currently being achieved or sought especially within the central city (equates to gross density of approximately 80-200 hh/ha). Further it is important to note that currently density within the various urban areas of Greater Christchurch lacks consistency with sporadic areas of greater density and some of lower density as shown in Figure and Figure . For example within the Residential New Neighbourhood Zone CCC[80] have had advised that new developments are reasonably achieving density which would equate to a level of 50 hh/ha, however this infill is occurring sporadically, in isolated pockets (50 hh/ha is not being achieved across the whole zone).

If Greater Christchurch wishes to achieve its aspirations of being a denser, more vibrant, liveable and competitive city, and to achieve the benefits associated with this urban form (including a reduction in car dependency), then additional

[80] Correspondence from a meeting with the CCC Spatial Planning Team – 7 August 2020.

consideration is required to what is the appropriate residential density to achieve in each area to utilise land most efficiently.

While a shift to a more compact urban form is identified within 'Our Space' planning document, the current target for redevelopment within established urban areas for Greater Christchurch of 45% is relatively low compared to other NZ urban areas. For example, the Auckland Plan has a target of 60-70% future housing to be developed within existing urban boundaries.

While density is anticipated to increase based on current zoning and land use patterns it is not occurring at the desired rate due to several mixed signals, incentives and investment decisions which are discussed below.

4.2.1.5 Future Land Development Patterns

Christchurch has been identified as a major growth area by both central and local government policy, reflecting the additional 160,000 people anticipated to call Greater Christchurch home by 2051 (bringing the population to a total of 655,000) [81]. This is reflected in several key strategies and partnerships including:

- The National Policy Statement on Urban Development 2020 identifies Greater Christchurch as just one of five Tier 1 urban environments in New Zealand that will be subject to significant intensification[82]; and the
- Waka Kotahi 'Keeping Cities Moving' Mode Shift Plan puts a greater emphasis on the closer integration of transport and land use and benefits of more compact urban form to reduce travel distances and achieve greater mode shift from driving to PT and active modes. It identifies six high-growth areas for New Zealand with Greater Christchurch being one of these.

Greater Christchurch is New Zealand's second largest urban area and currently second-fast growing region. By 2051 Greater Christchurch's 2021 population of 499,000 is projected to grow to over 655,000. This equates to a population growth rate of around 31% and translates to approximately 64,000 new households in Greater Christchurch by 2051.

Additional growth will place increasing demand on land transport networks. For example, currently approximately 20,000 workers commute into Christchurch daily from the Selwyn and Waimakariri districts, largely in private vehicles[83], with further growth predicted in these regions.

Except for the Central City, the areas predicted to experience the largest percentage increase in population growth are all greenfield (and peripheral) locations (Halswell, Lincoln, Rolleston, Wooden and Rangiora). This location of population growth is anticipated to perpetuate high car dependence with more people located in areas where they are expected to drive long distances to access opportunities.

Employment

As outlined in Section 1.9.2, employment in Greater Christchurch is forecasted to grow by approximately 47% between 2021 and 2051, from 244,000 to 359,000. Between 2021-2051 employment growth is projected to occur primarily within the Central City which is anticipated to comprise 22% of all jobs by 2051 as demonstrated by Figure . This indicates that the Central City is expected to strengthen in its role, have increased employment density and is more likely to attract PT patronage.

[81] QTP (2021). CTM v21 Update: Greater Christchurch Spatial Plan Land Use, 2021

[82] Policy 3 of the NPS-UD directs regional policy statements and district plans in tier 1 urban environments to enable in city centre zones, building heights and density of urban form to realise as much development capacity as possible, to maximise benefits of intensification, and metropolitan centre zones, building heights and density of urban form to reflect demand for housing and business use in those locations, and in all cases building heights of at least 6 storeys.

[83] https://www.nzta.govt.nz/assets/planning-and-investment/arataki/docs/regional-summary-canterbury.pdf p.130

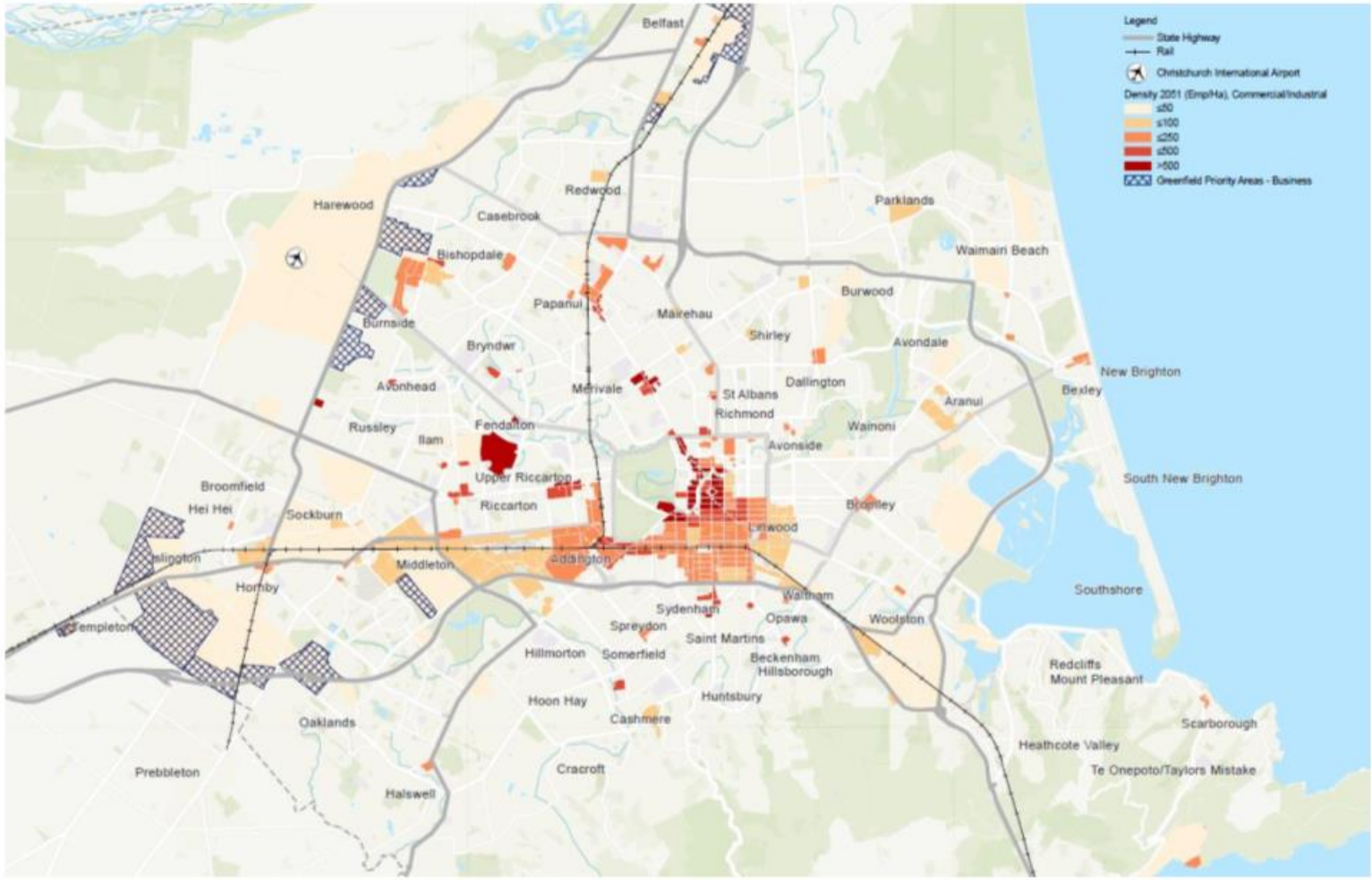


Figure 4-9: Greater Christchurch Employment Distribution 2021-2051

There is smaller, but still significant growth projected in Selwyn-Rolleston, Waimakariri-Kaiapoi, Waimakariri-Woodend, and Waimakariri-Rangiora (Figure).

The strengthening of the central city is important in a MRT context as MRT lines are typically required to support higher density locations, like the central city as they provide long term, reliable forms of access when supply of parking and road space becomes scarce.

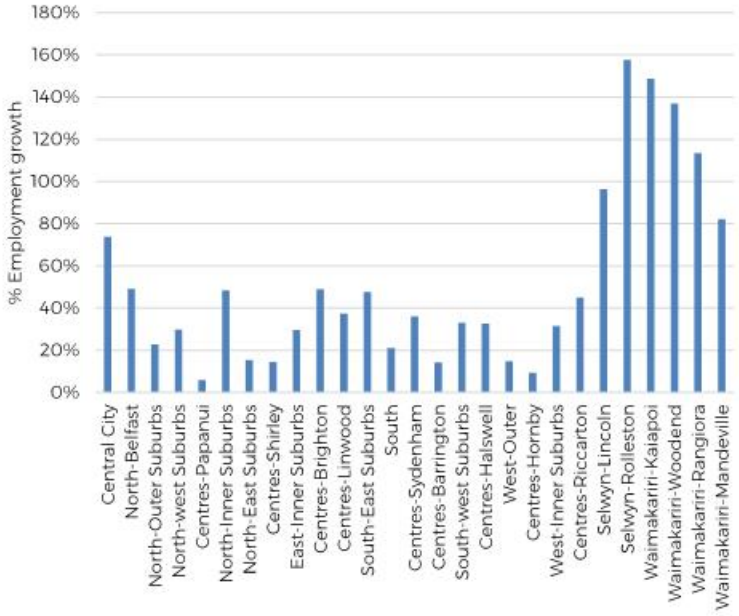


Figure 4-10: Areas of Employment Growth 2021-2051

Spatially, this can be demonstrated by Figure 4-11 nd Figure which outlines changes to employment density per hectare from 2021 to 2051. These show that by 2051 that large areas of the Central City will achieve a density of 250-500 employment opportunities per hectare along with areas to the north (along Papanui Road also showing densities at this level). This reinforces the importance of access to the central city and along corridors of clearly defined employment nodes.

19% of the population of Greater Christchurch or 49,300 people are anticipated to live in the four main satellite towns in Waimakariri and Selwyn by 2051 (8% in Rolleston, 3% in Lincoln, 5% in Rangiora and 3% in Kaiapoi). In contrast, just 12% of all employment opportunities will be located within these town areas showing a lack of integration between forecast residential and business settlement pattens.



Figure 4-11: Employment and Tertiary Density per Hectare 2021

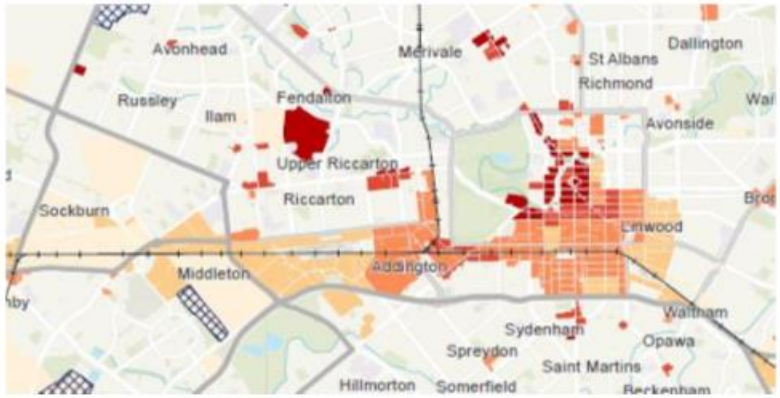


Figure 4-12: Central City and Surrounds - Employment and Tertiary Density per Hectare 2051

4.2.1.6 Background to the Land Development Patterns - Mixed Signals and Investment Decisions

Several incentives and signals for investment are at play in relation to the current and forecast settlement patterns and these often result in conflicting outcomes and a lack of clear direction. They emphasise that consideration beyond zoning provisions is required for Greater Christchurch to achieve 'aspirational' intensification targets and an urban form that supports a reduced car dependency. The following are examples of the mixed signals that have been occurring recently:

Investment in PT

In terms of investment in PT, Wellington, and Auckland both invested significantly more per capita in PT than Christchurch has. Wellington and Auckland have also increased their spending significantly in the last 10 years, while spending in Greater Christchurch has remained relatively flat (Figure).

However, there have also been some larger signals including the opening of the centrally located $53million Christchurch Bus Interchange in 2015.



Figure 4-13: Total PT expenditure in Auckland, Greater Wellington, and Greater Christchurch, 2010-2019[84]

Investment in Roads and State Highways

At the same time as a proportionally low spend on PT, Greater Christchurch has had a comparatively high proportion of per capita spend allocated to Local Roads and State Highways, when compared to both Auckland and Wellington. For example, between 2018-2021 Auckland has a per capita spend on PT of approximately $1275, compared to approximately $225 in Canterbury (Figure).

Major corridor capacity upgrades in a north-west-south arc around the city (including CSM2 and CNC)) are both operational and enabling decentralised and dispersed growth pattern through growth to the west.

[84] Graphed using data from the Waka Kotahi Transport Investment Online (TIO) database

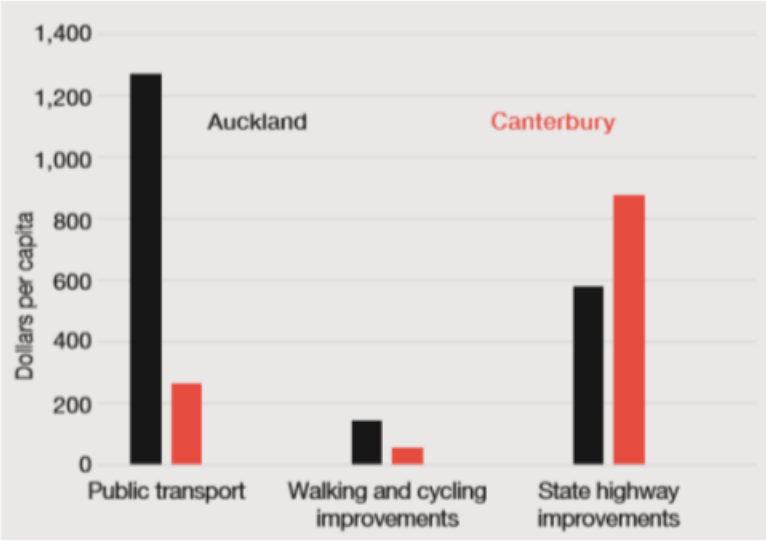


Figure 4-14. Auckland and Canterbury Transport Investment Programme Comparison, 2018-2021[85]

Parking Supply

The CDP currently restricts the establishment of permanent carparking buildings or parking lots where parking is the primary activity on site within the central city (Rule 7.4.2.1 RD8) and places further restrictions on carparking within the Central City Business Zone. Despite these restrictions, Christchurch has a high volume of parking supply, especially in the Central City where many vacant lots following the earthquakes have become temporary gravel parking lots.

As of 2020, approximately 64 hectares of land was used within the Central City for parking (off street and on-street parking)[86], providing a total of approximately 35,000 parking spaces within the Central City (this should be considered in the context of a total of 38,835 jobs within the central city in 2018 and just 7,883 residents[27]). Eighty per cent of the non-residential parking in the central city is on private land, mostly in the form of customer or staff car parking. Part of this oversupply in parking is a result of the 2010 and 2011 earthquake series with more than 200 vacant sites in the continuing to be used as temporary carparking spaces.

Outside the Central City, most suburban areas in Christchurch have an un-restricted on-street parking supply which typically has low occupancy rates[87]. Where occupancy of on-street parking regularly exceeds 75% at peak times CCC are seeking to apply time restrictions to these streets (i.e. P120 signs), with parking remaining free, unless with time restrictions these streets continue to see parking exceeding 75% at peak times.

The provision of substantial parking supply continues to support a perpetuation of high car dependency, making the use of the private vehicle a competitive transport mode (especially when accessing the Central City and KAC's)

Major Cycle Routes

Investment in the establishment of the Major Cycle Routes in Christchurch has seen the number of cyclists increase, especially within areas serviced by newly open cycleways and near the central city. Further investment is proposed with the government confirming 8 August 2020 that a further $125 million of Government funding would go towards six additional sections of cycleway.

The investment and establishment of the Major Cycle Routes indicates support for intensification and infill and an increasing in cycling mode share is directly attributable to this investment. However, the signals to developers and residents remain mixed, with this investment somewhat dwarfed by the scale of investment made in state highway and road improvements recently in Greater Christchurch (Figure).

Market Signals

Greater Christchurch has a relatively flat land value gradient from an approximate 5km radius from the Central City (Figure). This means that outside the 5km inner core, developers are less likely to build more intensively given the need to economise on higher land value areas isn't as critical.

[85] https://www.pwc.co.nz/publications/2019/citiesinstitute/cities-urban-competitivesness-christchurch.pdf
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[86] https://newsline.ccc.govt.nz/news/story/too-much-city-centre-parking-or-not-enough?fbclid=IwAR03h5C5M_k13IRvZi6vRCYMEkXyNU4tMdak4CGhgKhDhfTd8p8v73nmT2U

[87] https://ccc.govt.nz/assets/Documents/Transport/Parking/Suburban-Parking-Policy.pdf

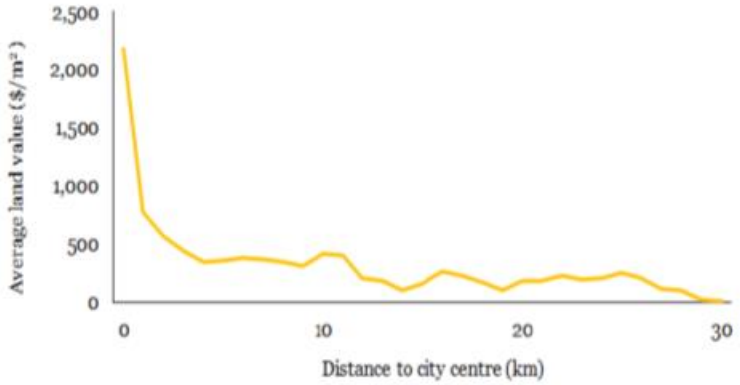


Figure 4-15: Greater Christchurch Land Value Gradient distance from the Central City as at 2019[88]

Land values in Greater Christchurch presented as a percentile of relative land values demonstrate that those areas of highest land values are typically central and to the north-west (Figure).

In comparison the same image of the Selwyn District shows that land values are typically lower but there are pockets of higher land value located around the key outer towns of Rolleston, Lincoln, Prebbleton and West Melton.

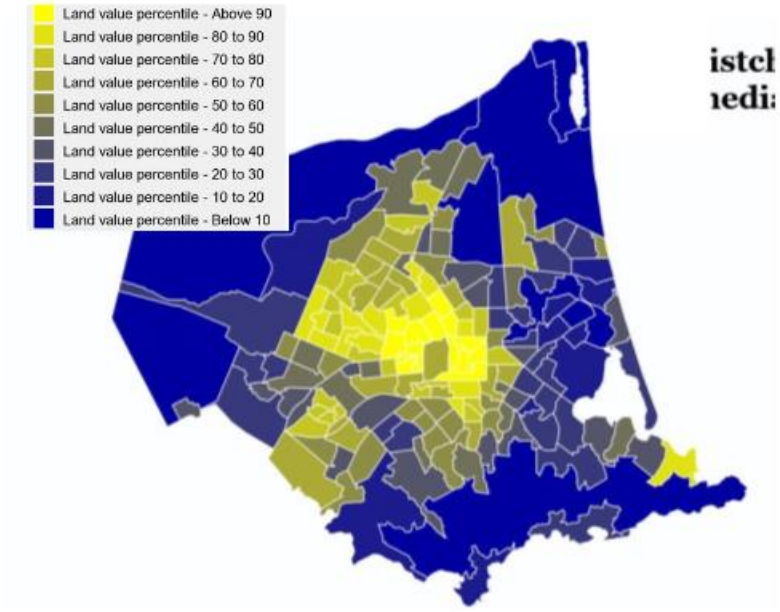


Figure 4-16: Christchurch City Relative Land Values 2019[89]

In terms of capitalisation ratios (the ratio of improvement value per overall capital value), within Christchurch City the areas of highest capitalisation do not coincide with the areas of highest land value, with greater capitalisation ratios occurring to the south and south-west (Figure).

[88] PWC Analysis

[89] PWC Analysis from 2019 Christchurch City Rating Valuations (Christchurch City percentiles of median SA2 land values)

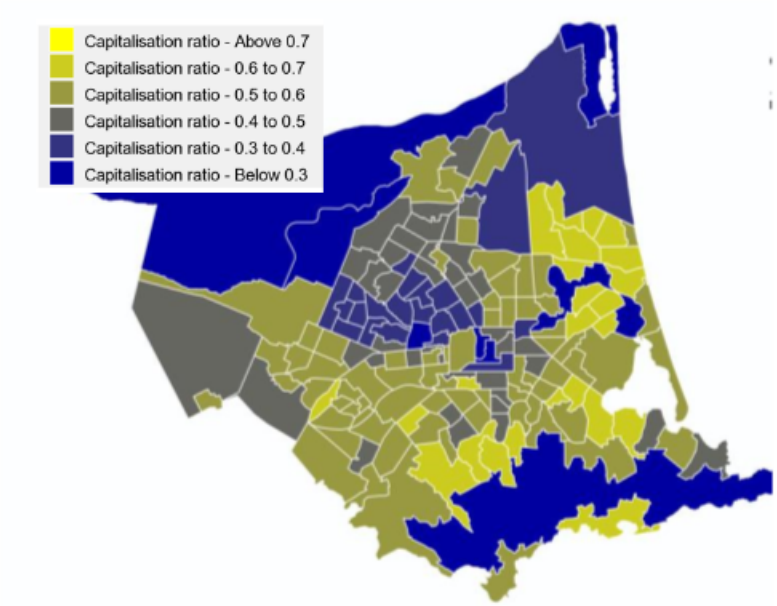


Figure 4-17: Christchurch City Capitalisation Ratio 2019[90]

This demonstrates that some of the high land value and low capitalisation areas could provide opportunities for densification in line with the future growth and spatial strategies for Christchurch. Internationally, there have been evidence of land value uplift following investment in MRT. One of the most comparable examples is the 7.1% increase in land value uplift experienced within 400m of the Light Rapid Transit corridor on the Gold Coast in 2014 (Table).

Table 4-1: International Examples of MRT Land Value Uplift[91]

Transit Type	Location	Population	System	Authors	Catchment	Uplift %	Year
LRT	Gold Coast, Australia	540,000	GCLR	Australian Government	400m	7.1%	2014
LRT	Missouri, USA	319,000	St. Louis Metrolink LRT	Garrett (2004)	700m	32.0%	2003
LRT	Buffalo, NY	900,000	Buffalo LRT	Hess & Almeida (2007)	400m	4%	1986
Metro	Helsinki, Finland	631,695	Helsinki Metro	Laakso (1992)	250m	4.8%	1982
HSR	Nantes, France	950,000	Nantes HSR	Haynes (1997)	-	20.0 %	1996

Selwyn District typically has a low capitalisation ratio (less than 0.5) corresponding with the large areas of rural land. The key outer towns all have capitalisation ratios above 0.7 (consistent with the central city and fringe areas in Christchurch City).

Accessibility is known to contribute to land values, with those properties most centrally located typically of greater land value than those located further out for MRT to induce land use change.

Zoning and Planning Restrictions

The Christchurch City Council currently provides opportunities for medium density development through the Residential Medium Density Zone which is located within 5km of the central city and immediately adjacent to KAC's. This zone enables maximum heights of 11m or three storeys of residential use. Further, some mid-level density is provided for in the Residential City Centre Zone which enables mid-rise apartments up 14-17m with a minimum density of 1 unit per 200m^2 of site area. Typically, mid-rise apartments are not seen outside of the City Centre, with predominantly 2-3 storey terrace housing being built in the RMD Zone. There are limited provisions in the Selwyn and Waimakariri District Plans to encourage the same level of intensification.

However, that all District Plans are under review and are anticipated to include new provision around intensification and greater housing choice to reflect the requirements under the NPS-UD. These provisions are likely to apply to all

[90] PWC Analysis from 2019 Christchurch City Rating Valuations (SA2 capitalisation ratios)

[91] PWC Analysis - 2020

residential zoned land, enabling the development of up to three residential units up to three storeys in height per site (where qualifying matters do not apply). As noted earlier, Selwyn and Waimakariri Distrct Councils have notified their plan changes, which have legal effect on notification unless qualifying matters apply. Christchurch City Council will notify their proposed plan change on 17 March 2023, but have indicated that there are qualifying matters which apply to all residential zones.

Existing Medium and High-Density Development

There is general discussion that there is currently a lack of good medium and high-density residential apartments in Christchurch, which does not assist with the transition to a denser, more compact urban with reduced reliance on the private motor vehicle. In 10 September 2020 an article was published summarising comments made by mayor Lianne Dalziel that CCC would be prepared to change planning rules in the Christchurch District Plan to prevent over intensification of Christchurch's suburbs despite it being against the Government directive to increase housing density[92].

It followed the completion of a Medium and High-Density Housing Urban Design Review commissioned in 2018 by CCC[93]. The report found many new developments have "monolithic" appearances and "inadequate or poor" design.

These comments and the media articles that surround reports add further confusion regarding a transition towards a denser urban form and achieving critical mass to achieve a more liveable and vibrant city.

Priority Locations for Growth

To date the Greater Christchurch land use planning documents, prioritise several key locations: the Central City, eight KACs across the Christchurch City (Belfast, New Brighton, Shirley, Linwood, Papanui, Riccarton, Spreydon, Halswell and Hornby), three KACs in Waimakariri (Rangiora, Woodend/Pegasus and Kaiapoi) and two KACs in Selwyn (Lincoln and Rolleston). These centres, as set out in the CRPS and Our Space are identified as focal points for employment (including offices), but also community activities and the transport network and which are suitable for more intensive mixed-use development.

In addition to the Central City and the identified KACs there are several other key areas or destinations which represent significant employment clusters including the Christchurch Airport and surrounds; Blenheim Road industry; Wider Hornby area; and University of Canterbury.

The lack of clear prioritisation amongst the extensive number of identified focal point locations is a further mixed signal for investment (in total there are thirteen KAC's and a central city).

MRT being a relatively fixed corridor, inherently prioritises locations in its essential decision making. Consequently, there is a need to identify prioritised locations for MRT in Greater Christchurch as part of future options assessments for this IBC. This prioritisation is in fact key to the potential value uplift as the increase in access relative to other places provided generates an increase in value and potential for density.

Regardless it is noted that the central city is the key priority location within Greater Christchurch due to employment and population density, anticipated growth and the recreational opportunities and city facilities located within the Central City (i.e. anchor projects such as the Convention Centre, Metro Sports, and the Canterbury Multi-Use Arena). In addition, the existing planning framework for Greater Christchurch acknowledges the role of the Selwyn and Waimakariri Districts (namely the principal centres of Rolleston and Rangiora) as key urban areas in Greater Christchurch and for future urban growth. Consequently, these are likely to be of consideration as key prioritised locations.

Summary

In summary, there have been a blend of mixed signals that contribute towards changing land use and transport behaviour. Investment in motorways, an oversupply of parking, along with market forces that support greenfield expansion do not encourage infill development. In contrast, there has been substantial investment in the central city (with the anchor projects such as the opening of the Christchurch Central City Bus Interchange and Te Pae Christchurch Convention Centre) and this is ongoing (i.e. the on-going construction of the Parakiore Metro Sports Facility and the scheduled development of the Te Kaha Canterbury Multi-Use Arena), and the Major Cycle Routes which promote a denser, and more liveable city not dependent on sole occupancy car travel.

4.2.1.7 Growth in Travel Demand and Transport Costs

Future housing growth in greenfield areas including new communities in the northern and southwestern parts of the City (i.e. Halswell), growth in Selwyn at Rolleston and Lincoln and growth in Waimakariri at Rangiora and Kaiapoi will result in increased numbers of people driving longer distances to access opportunities. Longer travel distances will result in greater transport costs for both the user and the wider community:

[92] https://www.stuff.co.nz/the-press/news/122714753/council-considers-changing-christchurchs-planning-rules-to-prevent-over-intensification-of-suburbs

[93] CCC Medium and High Density Housing in Christchurch: Urban Design Review 2020

- transport costs for greater distance travelled;
- longer vehicle travel distances and increased numbers of private vehicles will contribute to city wide congestion (bringing associated loss of time efficiency and associated health and environmental effects); and
- increased use of private vehicles will result in ongoing costs associated with dedicating large amounts of land and resources to moving (i.e. roads) and storing private vehicles (i.e. parking).

Table demonstrates the forecast average trip length for private vehicles in 2021 and 2051 and demonstrates a steady increase in average trip length across all measures (i.e. AM, IP and PM peak). Daily the average trip length for private vehicles will increase from 8.43km in 2021 to 8.84km in 2051. While this may not seem significant (0.41km increase), it is combined with a substantial rise in private vehicle numbers.

Table 4-2: Greater Christchurch Private Vehicle Average Trip Length 2021 - 2051[94]

Period	2021		2051	
	Veh Trips	avg trip (km)	Veh Trips	avg trip (km)
AM 2hr	180,200	9.18	215,800	9.72
IP 7 hr	609,900	7.80	729,300	8.15
PM 2hr	225,600	8.97	274,000	9.53
ON 13hr	294,400	8.89	3,408,200	9.17
Daily	1,310,100	8.43	1,590,700	8.84

Between 2021 and 2051 there is forecast to be a rise in traffic flow generally across the network, but this is particularly pronounced during the PM Peak. Traffic flow on local roads is anticipated to grow at a rate faster than traffic flow growth in the total network. Overall there is anticipated to be a 60% rise in traffic flow on local roads (typically quieter residential streets in the AM and a 65% rise in traffic flow on local roads in the PM) in the network between 2021 and 2051 as demonstrated by Table .

Table 4-3: Changes in Greater Christchurch Traffic Flow 2021-2051[94]

	2021	2031	2041	2051
Total (All Roads) - AM Peak[95]				
Network km	4,100	4,131	4,145	4,157
Veh.km	919,106	1,029,709	1,147,502	1,254,697
Flow (veh/hr)	224	249	277	302
% increase (cf. 2021)		11%	23%	35%
Local Roads - AM Peak				
Network km	2,222	2,229	2,231	2,231
Veh.km	160,778	191,962	222,494	259,088
Flow (veh/hr)	72	86	100	116
% increase (cf. 2021)		19%	38%	60%
Total (All Roads) - PM Peak[95]				
Network km	4,100	4,131	4,145	4,157
Veh.km	1,124,265	1,274,640	1,420,365	1,568,559
Flow (veh/hr)	274	309	343	377
% increase (cf. 2021)		**13%**	**25%**	**38%**
Local Roads - PM Peak				
Network km	2,222	2,229	2,231	2,231
Veh.km	196,056	241,213	279,344	324,535
Flow (veh/hr)	88	108	125	145
% increase (cf. 2021)		**23%**	**42%**	**65%**

This increased transport demand on local roads is a further transport cost of increasing transport demand and travel distances. The layout of Christchurch makes it very easy for vehicles to find alternative routes using local roads, reducing amenity for residents.

Considering the Central City specifically, substantial growth in trips to the Central City are projected as a result of the future residential and business land development (Figure). Majority of the demand in travel to the central city originates from the areas immediately surrounding (i.e. North-Inner and West-Inner) and additional substantial growth from the South, Centres-Riccarton and Centres-Linwood.

[94] QTP (2021). CTM v21 Update: Greater Christchurch Spatial Plan Land Use, 2021

[95] AM Peak - 0700 - 0900; PM Peak - 1600-1800.

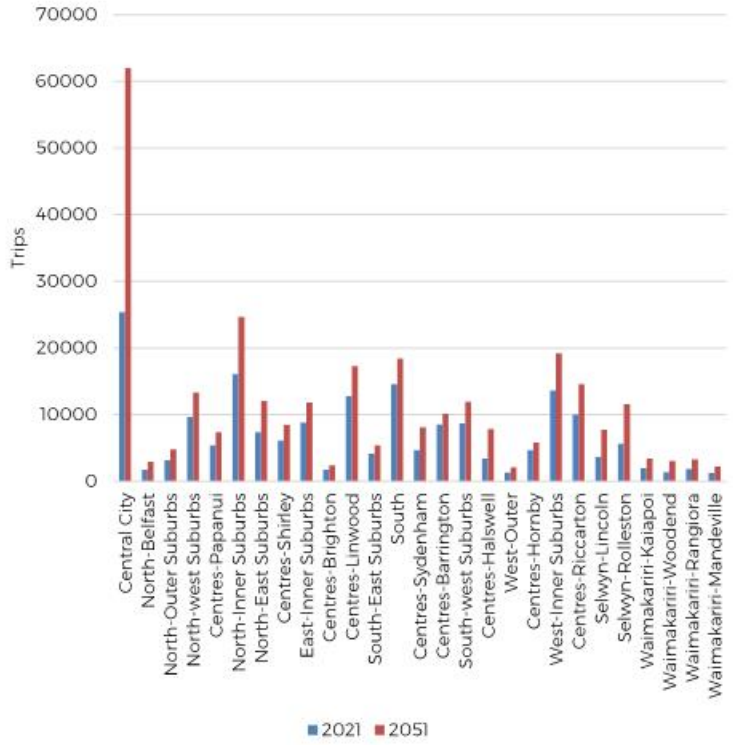


Figure 4-18: Origin of Trips to the Central City 2021-2051[96]

Overall, this will result in an additional 114,000 daily trips to the central city in 2051 than in 2021. If the current central city mode split is retained, then this will result in an additional 108,000 trips taken by cars entering the central city per day.

Further the number of total daily person trips originating from within the northern and south-western corridors to the Central City (based on the adjacent CTM zones from Papanui/Main North Road and Riccarton/Main South Road Figure), is anticipated to comprise approximately 18% of all trips to the central city in 2051 (not accounting for the additional trips that originate outside these corridors that will also use these corridors for travel to the central city). The northern corridor is anticipated to experience more growth in central city trips than the corridor to the south, but that most of this growth will be from within Christchurch City (with only minimal growth from Rangiora) (Figure).

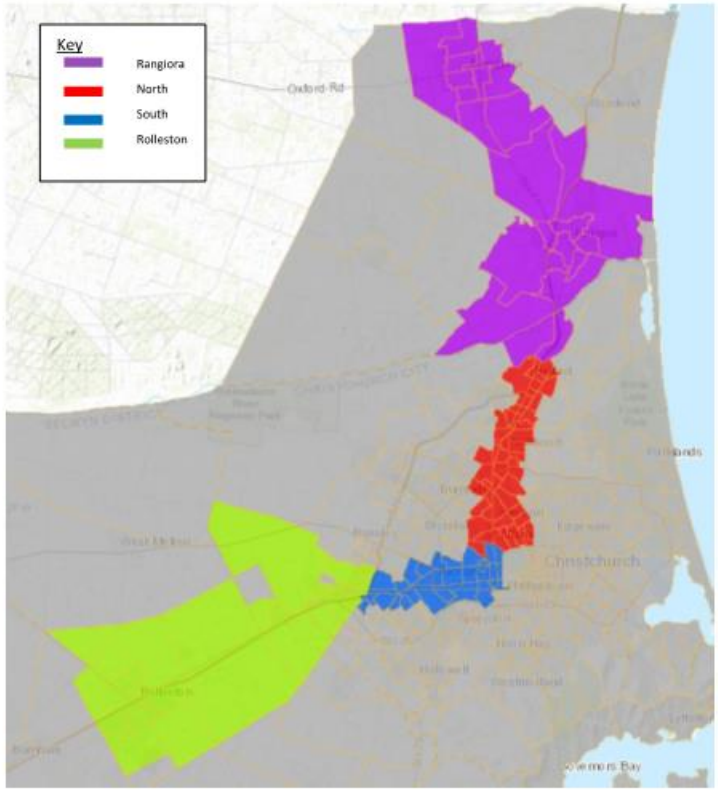


Figure 4-19: North and South Corridor Extents

[96] QTP (2021). CTM v21 Update: Greater Christchurch Spatial Plan Land Use, 2021

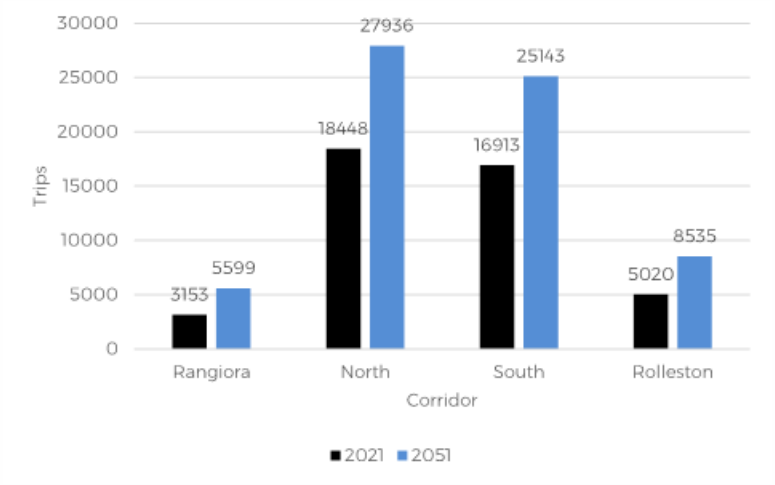


Figure 4-20: Growth in travel originating from within the North and South Corridors

4.2.1.8 Continued Low PT Mode Share

PT now, and in 2051 will not be a viable, competitive PT option in Greater Christchurch when compared to the private vehicle based on current and forecast residential and business settlement patterns, continuing to result in poor travel choices and access to opportunities.

Table outlines the modelled mode share for Greater Christchurch in 2021, 2031, and 2041 and demonstrates that by 2051, PT mode share is forecast to equate to just 2.4% of all daily person trips.

Table 4-4: Forecast Daily Mode Share 2021 - 2051[97]

Mode	Mode Share			
	2021	2031	2041	2051
Private Veh	95.0%	93.6%	93.1%	92.6%
PT	2.4%	3.3%	3.7%	3.9%
Cycle	2.7%	3.1%	3.3%	3.4%
Total Daily Person Trips	**2,163,100**	**2,320,900**	**2,489,700**	**2,688,700**

4.2.1.9 Summary

Greater Christchurch is of strategic importance to New Zealand as a whole and projected population and employment volumes and land use patterns will result in an increasingly constrained access as a result of continued high car dependency and increased transport costs to users and the wider community.

MRT has the potential to enable urban intensification and development long the MRT corridor with a focus on high potential job and household growth locations. If developed to align with the Greater Christchurch Spatial Plan the MRT system could unlock urban development and stimulate intensification along the route.

4.2.2 Problem Statement 2 - The PT system is not sufficiently attractive to compete with private vehicles

The PT system is not sufficiently attractive (in terms of travel time, reliability, convenience, comfort and cost) to encourage its use in preference to private vehicles, resulting in a continuation of the low mode share for PT and higher congestion, which will constrain access to the central city and other key destinations, increase public and private transport costs and restrict economic growth.

4.2.2.1 Continued Low PT Mode Share

As outlined in Section 2.2.1 Greater Christchurch has a low mode share for PT and a continuation of current trends forecasts that this will continue through to 2051.

In addition, to the lack of competitiveness of PT compared to the private vehicle for access to opportunities, PT is currently not well used (patronage is low and flat or declining) and there is a high car mode share. There are reasons for this including that the service is facility to attract new users (even though

[97] QTP (2021). CTM v21 Update: Greater Christchurch Spatial Plan Land Use, 2021

existing riders appear relatively well-satisfied with the service offering (2019 surveys indicated 96% satisfaction rates)).

Qualitative feedback from people who live in Christchurch has confirmed a long poor public perception of PT in Christchurch. Helen Fitt identified this in her 2015 thesis, in which she interviewed 32 participants on 'social meanings' relating to PT. One of her key conclusions was:

> *"Participants associated bus use with some positive social meanings, but more commonly and consistently buses were described as a stigmatised, low status mode of transport for people with no other options. Although participants commonly argued that negative social meanings did not influence their bus use, there is some evidence to suggest that a deeply embedded habitus led to participants not considering buses to be an appropriate option for travel"*[56].

The low and flat (or declining) PT Patronage in Christchurch, in contrast to Wellington and Auckland, shows clearly that new users are not being attracted to Christchurch's PT system. Various sources of information indicate that this is due to a range of factors, broadly split into "perception" and "experience".

4.2.2.2 Generalised Cost Analysis

Generalised cost analysis has been undertaken to compare the total monetary and non-monetary cost for a journey taken to the Central City by PT with that of a private vehicle. Generalised Cost is used to sum all components of trip cost using a common units of measure (typically either minutes or dollars), to enable meaning comparisons to be made between modes in terms of relative cost of travel to inform the attractiveness of each mode.

For the purposes of this IBC, Generalised Cost is expressed in units of minutes, meaning trip components such as bus fares, parking charges and vehicle operating costs are converted from dollars to minutes based on a value of time ($/hr).

The Generalised Cost undertaken for this IBC includes cost components outlined in Table :

Table 4-5: Generalised Cost Components

PT Trip Cost Components	Private Vehicle Cost Components
Walk time	Terminal time at each end of the trip (walking to/from car)
Wait time	In vehicle time
In vehicle time	Vehicle operating costs (fuel and maintenance)
Transfer time (between services)	Parking costs
Fare	

Consideration has been given to the generalised cost (in minutes) of travel from all CTM zones in Greater Christchurch to the Central City during the AM peak in 2051 for PT (where available from that location) and private vehicle. The analysis demonstrates that on average the generalised cost in minutes of traffic from all zones to the Central City is 16 minutes longer for PT than the car. The effect is most pronounced in Diamond Harbour and Charteris Bay in Banks Peninsula and in the largely rural area between Rangiora and Woodened and Wakuku where the generalised cost in minutes for PT is over 100 minutes longer than for the car. This demonstrates that current the PT system is not sufficiently attractive to encourage its use in preference to private vehicles.

Overall, this demonstrates that PT now, and in 2051 will not be a viable, competitive PT option when compared to the private vehicle and will continue to result in poor travel choices and access to opportunities.

4.2.2.3 Growing Deficiency in Access to the Central City

The Central city is used below an example of growing deficiency in access to the key destinations but is demonstrative of other destinations.

The growth in travel demand to the central city, along with continued perpetuation of high car mode share will result in a growing deficiency of access to the central city. Figures 62 and 63 show the volume to capacity ratios of roads in 2021 and 2051. These demonstrate that the proportion of roads that are at 70% or more volume to capacity ratio substantially increases around the Central City in the PM peak from 2021 to 2051.

By 2051 the main corridors into the city centre – which are shared by buses and cars are getting to capacity (70-%-90%), which will result in a limitation on access (which left unchecked will only get worse over time). Notably, the PM peak is worse than the AM peak.

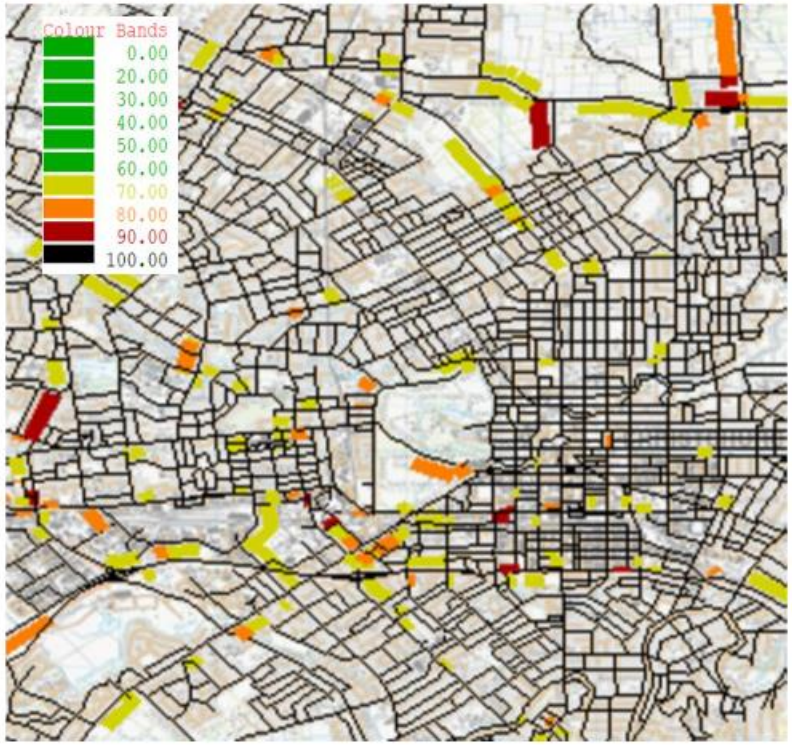


Figure 4-21: 2021 Volume to Capacity Ratio - PM Peak

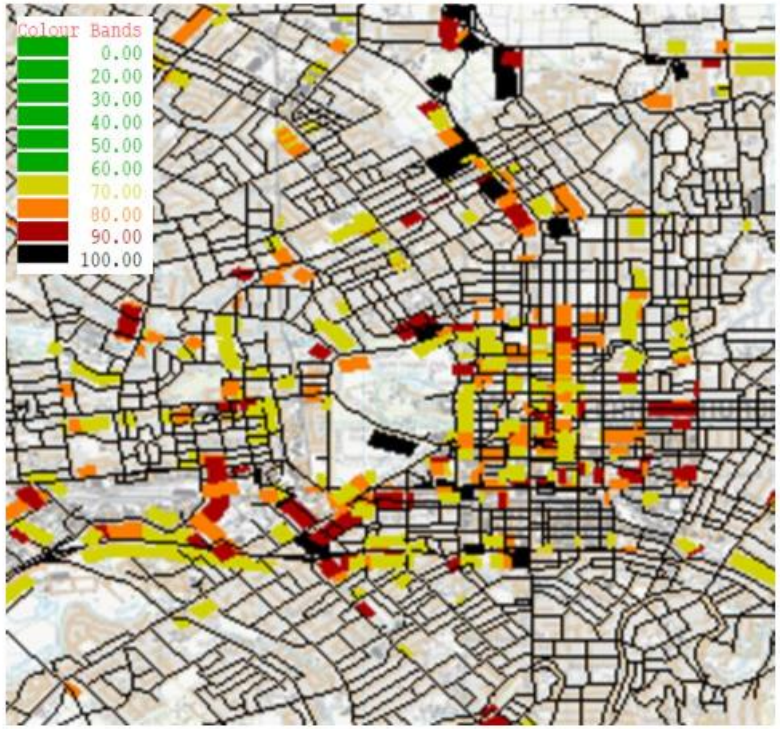


Figure 4-22: 2051 Volume to Capacity Ratio - PM Peak

Further, growing congestion will result in a reduction in the percentage of the population that has access to employment and opportunities in the Central City. Figure demonstrates the distance that can be travelled within 30 minutes from the Central City using PT and shows that by 2051 this distance is substantially constrained particularly to the west (only just reaching the Riccarton KAC), even with the improvements proposed to the PT network as part of Foundations ICB) and Rest of Network IBC. In 2021, 29% of all households in Greater Christchurch (57,000 households from a total of 196,900 households) can reach the Central City during the AM peak by PT and by 2051 this remains at 29% (76,000 households from a total of 261,100 households).

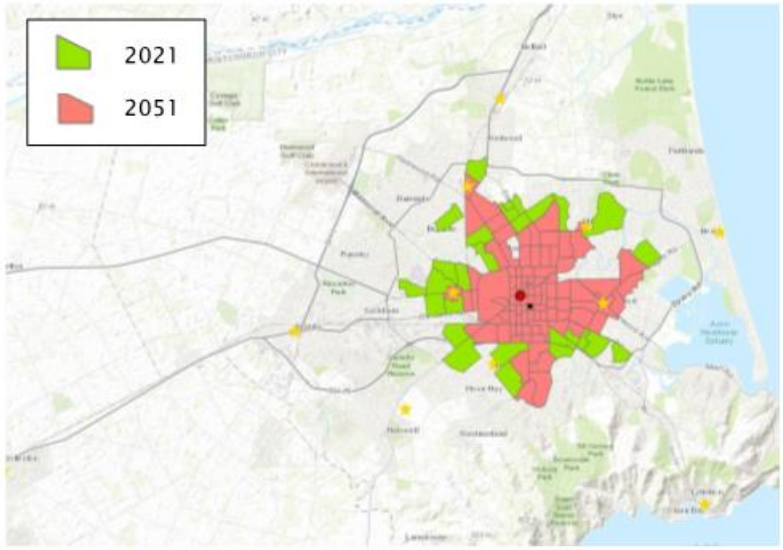


Figure 4-23: PT 30-minute Travel Distance to the Central City - AM Peak 2021-2051[98]

The effect is even more pronounced for the private vehicle. In 2021, a private vehicle can travel to the boundaries of Christchurch City and even as far as Lincoln during the AM peak within 30 minutes (Figure). However, by 2051 access to the west of the city is particularly restricted with a 30-minute travel time no longer reaching Hornby, and only just reaching as far as Halswell.

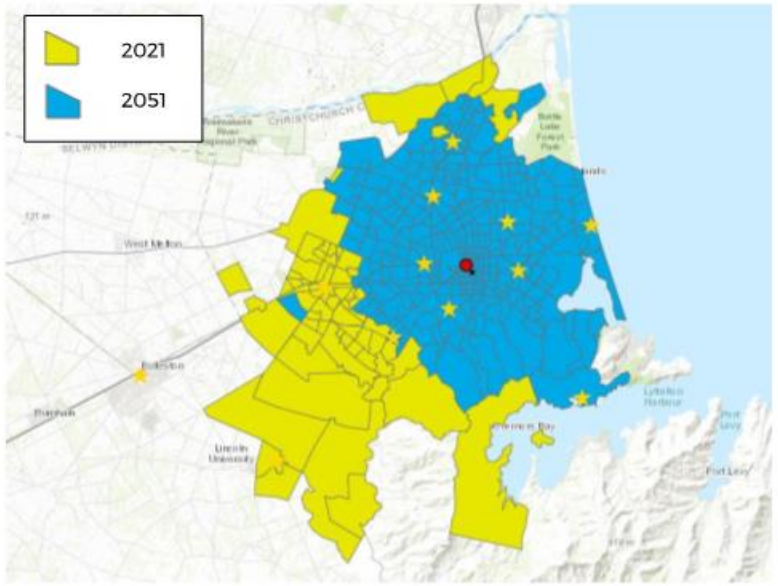


Figure 4-24: Private Vehicle 30-minute Travel Distance to the Central City - AM Peak 2021-2051[99]

This demonstrates that accessibility to the Central City will be constrained and that the proportion of the population that can access this key employment and activity area in an efficient manner by either PT or the private vehicle will be restricted. In 2021, 82% of all households in Greater Christchurch (162,000 of a total 196,900 households) can reach the central city during the AM peak by private vehicle within 30 minutes. By 2051 this reduces to 60% (157,000 from a total of 261,100 households).

Figure and Figure demonstrate a lack PT priority within Greater Christchurch. While one would expect to see a deterioration in vehicle access to the Central City as population and employment growth results in additional trips on the network (due to the physical inability to add more capacity to the network while retaining urban amenity and active mode provision in an already constrained urban environment within the Central City and surrounding fringe), the reduction in PT accessibility is of significance as it has the potential

[98] QTP (2021). CTM v21 Update: Greater Christchurch Spatial Plan Land Use, 2021

[99] QTP (2021). CTM v21 Update: Greater Christchurch Spatial Plan Land Use, 2021

to restrict Christchurch's Central City's potential development and economic performance.

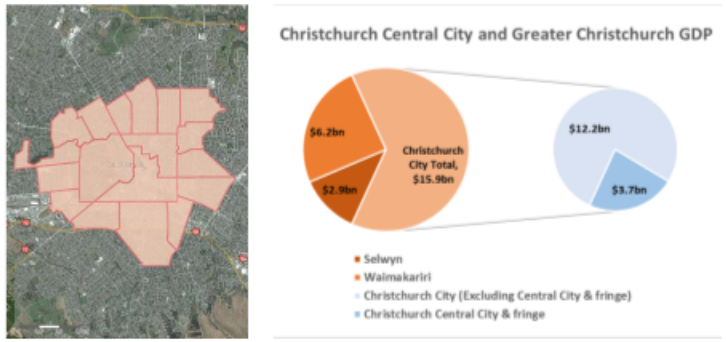
The Figures show that the PT network is being impacted by the similar congestion constraints of the wider road network and this is restricting its ability to bring people to the Central City for employment, education, shopping, or recreation. Without investment in a dedicated right of way system for PT, this is anticipated. However, investment in a dedicated right of way system (typical of MRT) would enable PT to be insulated from traffic congestion and retain their access benefits as road congestion worsens.

There is a stark difference in choice in access between private cars and PT with the proportion of residents with a genuine choice to use PT for access to the central city being very low.

4.2.2.4 The Economic Importance of the Christchurch Central City

Christchurch is of crucial economic importance to New Zealand, being the home to over half of the South Island's population. Currently, the Christchurch Central City and fringe area identified in Figure , contributes $3.7 billion annually to New Zealand's GDP. It is responsible for 14.8% of Greater Christchurch's GDP and 10.5 % of the Canterbury region's GDP, showing it is of regional importance (Figure).

Greater Christchurch itself contributes $25 billion annually to the NZ economy, meaning it equates to 70% of all GDP in Canterbury and 37% of the South Island's GDP ($66.75 billion[100]).



101

Further as at 2021, the Central City (within the four avenues of Moorhouse, Fitzgerald, Bealey and Deans) employed 45,000 people (18% of jobs in Greater Christchurch) and by 2051 this anticipated to have increased to 78,000 people[27] (increasing slightly to 22% of all jobs in Greater Christchurch), demonstrating that the ongoing economic success of the central city is of critical importance to Greater Christchurch (Figure). The central city has the highest employment density in Greater Christchurch.

[100] https://www.stats.govt.nz/information-releases/regional-gross-domestic-product-year-ended-march-2019

[101] Stats NZ, MBIE, PwC Analysis



Figure 4-27: Forecast employment growth in the Central City and Greater Christchurch, 2021-2051[102]

Enabling efficient access to the Central City is critical for ensuring that access to jobs and markets does not restrict the economic potential of Greater Christchurch and future investment (Figure). Constrained access can hamper development activity, given the role that access has in facilitating social and economic interactions.

This is consistent with the Christchurch Economic Development Economic Strategy 2017 'A City of Opportunity'[103] which notes that the establishment of a connected, engaging and thriving central city is critical for attracting people, visitors, and new businesses to the city.

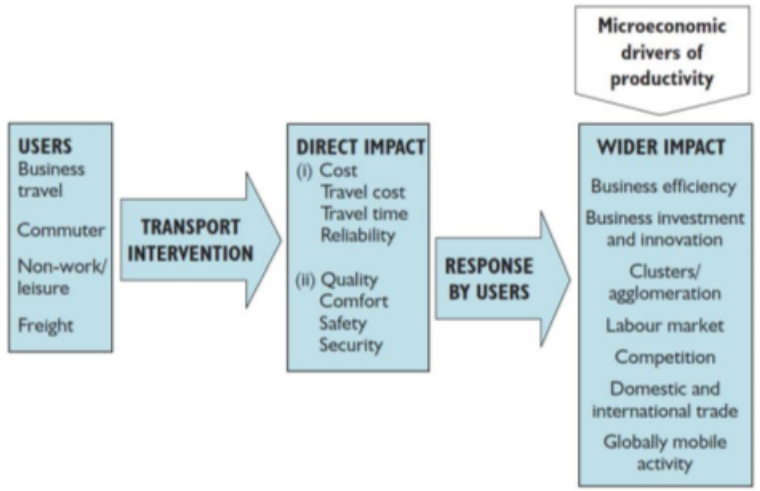


Figure 4-28. Relationship between transport access and economic productivity[104]

Further the Ministry of Transport notes that "where the potential for economic growth is present and there are capacity constraints, a lack of transport investment can inhibit potential growth. Investment in these circumstances should focus on responding to demand and 'pinch points' which would otherwise constrain growth."[105]

4.2.2.5 Summary

Overall, the evidence demonstrates that the PT system on it's own will not be sufficiently attractive to encourage its use over the private vehicle. This lack of attractiveness in terms of travel time, reliability, convenience, comfort, and cost contributes to ongoing low PT mode share and higher congestion associated with high car dependency. A lack of a viable, competitive PT between Christchurch combined with growing outer urban areas such as Rolleston and Rangiora which will result in poor travel choices and access to opportunities and a high car dependency.

[102] QTP (2021). CTM v21 Update: Greater Christchurch Spatial Plan Land Use, 2021
[103] https://www.greaterchristchurch.org.nz/assets/Documents/greaterchristchurch/Plans/CEDS.pdf
[104] Eddington Study (2006). (p. 24). As referenced in https://www.transport.govt.nz/assets/Uploads/Our-Work/Documents/03f6cc62af/edt-Contribution-of-transport-to-economic-development.pdf

[105] https://www.transport.govt.nz/assets/Uploads/Our-Work/Documents/03f6cc62af/edt-Contribution-of-transport-to-economic-development.pdf p. 11

Constrained access to the Central City will place at risk the economic performance of the Central City and future investment given the acknowledged role that access has in facilitating social and economic interactions. Given the economic performance of the Central City is of local and national significance due to its employment opportunities and contribution to GDP, along with its leisure, recreation, arts, cultural opportunities and more, constrained access is of concern.

MRT has the potential to play a role in improving access between these communities and key areas of opportunity, through providing a fast, frequent connection to key nodes or locations of high employment and residential density. The speed and directness of an MRT connection has the potential to make trips to some, high priority destinations competitive with private cars. Further it can help optimise the existing high-frequency bus network and provide customers with a premium PT service preferred over the use of the private vehicle that is a more competitive transport choice.

As outlined in Section 2.3 'MRT Characteristics' there is potential for investment in a dedicated right of way system (typical of MRT) to enable PT to be insulated from traffic congestion, helping to address a projected decline in access. A dedicated right of way system ensures that the access benefits of such a system do not deteriorate as road congestion worsens. Given the economic importance of the Central City, retaining a high level of access to it is critical.

MRT is a corridor-based transport and land use planning tool. Given the central city is the key priority location within Greater Christchurch due to employment and population density, anticipated growth and the recreational opportunities and major city facilities located within the Central City (i.e. anchor projects such as the Convention Centre, Metro Sports, and the Canterbury Multi-Use Arena), any MRT solution is anticipated to terminate at the Central City. This would ensure efficient transport access for Christchurch's Central City even as growth patterns and travel demand place additional demand on the road network.

MRT could be used to ensure the accessibility of the city centre to key labour and customer markets along with city wide opportunities in Greater Christchurch is retained, while allowing it to become denser and more productive by providing a greater capacity and a more reliable, and efficient form of transport.

4.2.3 Problem Statement 3 - Continuation of the current transport system will fail our climate change responsibilities and lead to poorer public health outcomes

As Greater Christchurch grows, a continuation of the current transport system is not sustainable and fails our climate change mitigation and adaption responsibilities. Higher vehicle use will result in higher levels of embedded carbon, higher greenhouse gas and particulate emissions, and poorer public health outcomes

4.2.3.1 Aspirations for and Responsibilities to a Low Emissions Future

By 2050 Christchurch is projected to be at risk from a 15-30 cm sea-level rise and be experiencing a 0.5-1.5°C average temperature increase over pre-industrial levels. Greater Christchurch will be hotter, winder and drier[106].

The New Zealand Government and CCC are committed to reducing emissions and preparing for the opportunities and challenges presented by climate change. The Government's Climate Change Response (Zero Carbon) Amendment Act 2019 introduced in late 2019 sets the target of New Zealand having net zero greenhouse gas emissions by 2050, excluding biogenic methane.

In addition, Te hau mārohi ki anamata: Towards a productive, sustainable and inclusive economy, Aotearoa New Zealand's first emissions reduction plan was released in May 2022. This sets the target of reducing total kilometers travelled by light vehicles by 20% by 2035 through improved urban form and the provision of better travel options, particularly in New Zealand's largest cities.

All Canterbury Councils (except for Kaikōura) and Ngāi Tahu are part of the Regional Climate Change Working Group and both ECan and CCC declared a climate emergency in May 2019.

CCC has agreed to set a target for Christchurch achieving net zero greenhouse gas emissions, excluding methane, by 2045 and as an organisation aspires to be carbon neutral by 2030 for all activities. Currently Greater Christchurch comprises a dispersed urban form and has a relatively high dependency on road and private transport and this will contribute to increased climate change impacts and pose further challenges for transition to lower emissions.

Further in the context of the anticipated growth for Greater Christchurch the Strategic Plans and Policy for Greater Christchurch outline aspirations for a low emissions future for Christchurch as demonstrated below:

- The UDS sets a vision for Greater Christchurch to have a "vibrant inner city and suburban centres surrounded by thriving rural communities and

[106] NIWA Canterbury climate change projections report, Feb 2020

towns, connected by efficient and sustainable infrastructure". It identifies seeks to manage growth in a way that obtains greater efficiencies from transport infrastructure and creates an urban form that minimises the use of energy and water.

- Our Space supports this further identifying that living with, and mitigating climate change impacts is a key growth issue for Greater Christchurch. The settlement pattern proposed seeks to integrate land use and transport planning to ensure safe, accessible, and liveable urban areas are created. It promotes a compact sustainable urban form, supported by efficient transport and development located in a manner that considers climate change. It identifies development targets for 45% of new housing to be met through the 45% redevelopment of existing areas in Christchurch City, 36% through existing greenfield development in Christchurch City, Selwyn and Waimakariri and 19% through new greenfield and redevelopment areas in Selwyn and Waimakariri.
- Canterbury Regional Public Transport Plan 2018-2028 has a vision of providing innovative and inclusive PT that sits at the heart of the transport network and supports a healthy, thriving, and liveable Greater Christchurch. It outlines that by 2028 it wants to improve health and environmental outcomes by delivering a zero emissions fleet.
- Christchurch City Council have identified five key strategic priorities including meeting the challenge of climate change through every means available, outlining they will work with communities to reduce greenhouse gas emissions and respond to the opportunities and challenges presented by climate change[107].

Creating more walkable, well connected communities will have health benefits not only due to reduced congestion and air pollution, but as mode shifts encourages towards more active travel, and improved wellbeing.

Lastly, the Christchurch mode shift plan looks to encourage people to use more sustainable modes will support transport's contribution to emissions targets and to manage transport congestion associated with the accommodation of Greater Christchurch growth.

4.2.3.2 Christchurch Car Dependency

As covered in for Problem Statement 1, Greater Christchurch is an area of high car dependency. As New Zealand's second largest city Christchurch has a high percentage of people that use a car or company car as their primary mode of travel (80%) as opposed to 54% in Wellington and 75% in Auckland[108].

Residents in Greater Christchurch also have high levels of car ownership but there are spatial patterns to this across the city. In Christchurch City, areas with the highest percentage of households with no motor vehicle (>10-22%) are scattered throughout the City, however concentrations are in the east and south/south-west of the City (Figure). This data aligns with the City's weighted mean New Zealand IMD values, where areas with the highest deprivation (with values 9 and 10) are located mainly to the east and south-west of the City.

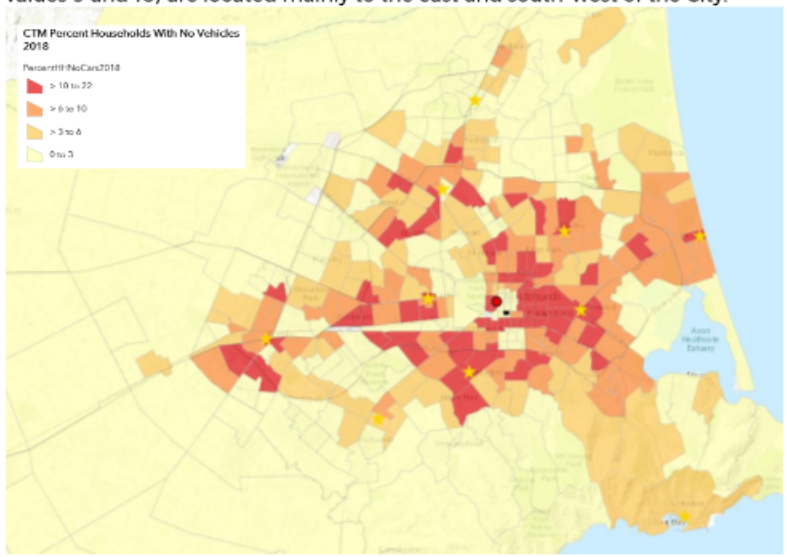


Figure 4-29: Percentage of households with no motor vehicle by CTM Model Zone - Christchurch City, 2018 Census

In the Waimakariri District, the area with the highest percentage of households with no motor vehicle (>10-22%) is the part of central Rangiora that is one of the District's highest weighted mean New Zealand IMD value (value 8).

In the Selwyn District, 0-3% of households in the Selwyn District have no vehicle. This data aligns with the District's weighted mean New Zealand IMD values, where there are no areas of high deprivation (with values 8 and 10).

[107] https://ccc.govt.nz/the-council/how-the-council-works/20182028-vision/strategic-priorities
[108] https://www.nzta.govt.nz/assets/planning-and-investment/arataki/docs/step-changes.pdf,

p. 25

In summary, households in Waimakariri District and Selwyn District are more likely to have higher car dependency, and a greater percentage of households with more than two cars (Figure).



Figure 4-30: Greater Christchurch Proportion of Households with Two or More Cars

Lastly, not only are there spatial considerations for car usage and their storage but there can be negative impacts on the environment from the construction and operation of roading infrastructure (i.e. harmful effects on water, biodiversity and resource consumption can result from the expansion of roads).

4.2.3.3 Increasing Congestion

Greater Christchurch must achieve greater mode shift changes to ensure the transport network can provide for anticipated growth in the future. The modelling undertaken for the Future Development Strategy shows how the number of 'poor performing intersections' increase across Greater Christchurch over time. However, increasing PT mode share from 2.5% (Do-Minimum) could reverse this trend, as demonstrated in Figure Figure to Figure .



Figure 4-31: Poor performing intersections, 2021

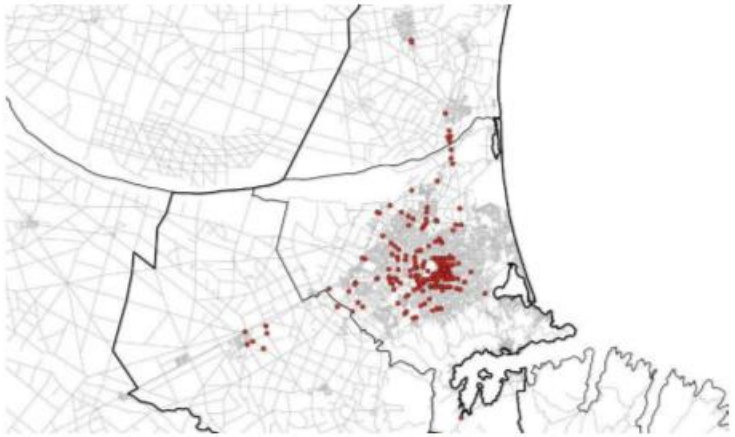


Figure 4-32: Do-Minimum forecasted poor performing intersections, 2051 (2.5% PT mode share)



Figure 4-33: Forecasted poor performing intersections, 2051 (10% PT mode share)



Figure 4-34: Forecasted poor performing intersections, 2051 (15% PT mode share)

The extent of increasing congestion is also demonstrated by the travel isochrones for the Central City in Sections 2.2.2 above. Increasing congestion not only results in lost economic productivity (time lost due to travel) but increases adverse environmental effects.

4.2.3.4 Worsening Environmental Outcomes

Nationally transport is a large contributor of the average New Zealand household carbon footprint, with 47% of carbon dioxide emissions in New Zealand in 2018 originating from transport (90.7% from road vehicle emissions and 6.7% from domestic aviation)[109](Figure).

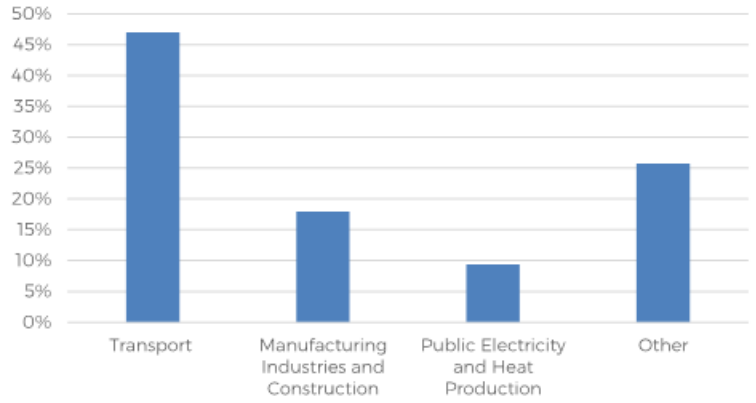


Figure 4-35: Source of New Zealand Carbon Dioxide Emissions in 2018[110]

Land use patterns that do not integrate residential and business land use can contribute to higher CO_2 emissions per commuter. Figure demonstrates annual CO_2 emissions per commuter for Auckland, Wellington and Christchurch in 2013. It shows that Greater Christchurch has comparatively quite low CO_2 emissions per commuter (especially within the more central suburbs) but that these emissions increase with distance from the Central City.

Within Greater Christchurch, transport contributes 53% of Christchurch's emissions (higher than the national contribution of 47%) and is a significant contributor to poor local air quality[111] Increasing growth and a perpetuation of

[109] https://www.stats.govt.nz/indicators/new-zealands-greenhouse-gas-emissions
[110] https://www.mfe.govt.nz/publications/climate-change/new-zealand%E2%80%99s-greenhouse-gas-inventory-1990-2018-snapshot

[111] Canterbury Regional Public Transport Plan 2018-2028, p.13

high car dependency, along with increasing transport congestion in the network will only worsen transport emissions in Greater Christchurch.

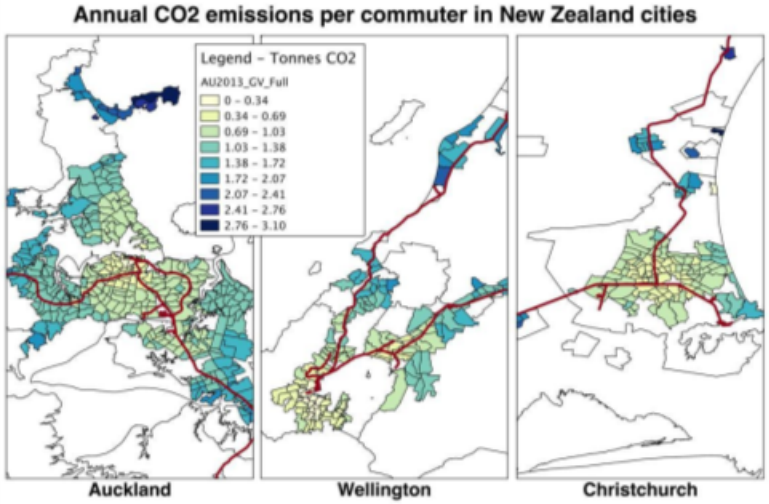


Figure 4-36: Annual CO2 Emissions per Commuter in New Zealand Cities[112]

Emissions are important, especially in Christchurch which has a long history of poor air quality, given its geography which results in a temperature inversion layer which traps pollutants. In 2016, Christchurch had the worst air pollution of any of New Zealand's main centres, at 21 PM10[113] (Figure).

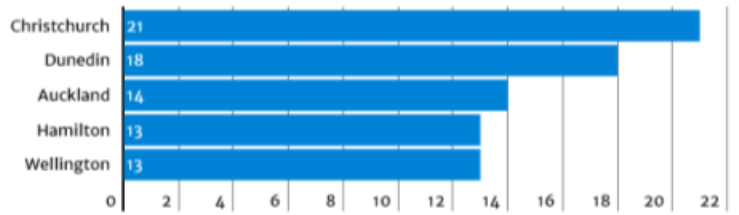


Figure 4-37: Air Pollution in 2016, showing annual mean level of PM10 micrograms per cubic metre[113]

Air quality is tracked against the number of allowable high pollution nights per airshed as determined by the National Environmental Standards for Air Quality which set different targets for different airsheds. Christchurch and Kaiapoi airsheds must experience fewer than three days per year with PM10 over 50 micrograms per cubic metre of air from 1 September 2016 and no more than one day per year from 1 September 2020.NESAQ. Currently this prescribes that Christchurch and Kaiapoi airsheds are allowed 3 high pollution nights per annum, and Rangiora 1 per annum. As of 20 August 2020, Christchurch had experienced 8 high pollution nights in 2020 and Rangiora 4[114] high pollution nights, showing continued difficulty in meeting the prescribed target. A reduction in car mode share in Greater Christchurch will contribute positively towards improved emissions.

[112] https://www.greaterauckland.org.nz/2020/11/16/household-emissions-in-nz-part-2-transport/#jp-carousel-32555

[113] https://www.stuff.co.nz/national/health/80120726/why-the-south-island-is-home-to-new-zealands-worst-air-pollution

[114] https://ecan.govt.nz/your-region/your-environment/air-quality/



Figure 4-38: Car and Bus Emission Comparison[115]

As demonstrated by Figure , even one diesel bus roughly equates to the same CO^2 emissions as five petrol cars. However, given Environment Canterbury have a strategy to move to an electric fleet (use only zero emission PT vehicles) by 2028[116] in Canterbury, there substantially greater reductions to be had from a reduction in vehicle mode share in Greater Christchurch.

While Figure shows general decrease in emissions over time (due to assumed electrification of fleet), it is not sufficient to meet the Government's emission reduction target of net-zero long-lived gases by 2050. By 2051, the forecasted CO_2 is at 1732 tons/day, CO is at 1711 kg/day and NO_x is at 1004 kg/day. It is also noted that with electrification of fleet, the uptake rate in the future is highly uncertain, the life cycle emissions of electric vehicle (especially with battery production and the current inability to recycle) is still significant[117], and electric vehicles still take up space and contribute to congestion on the road network.

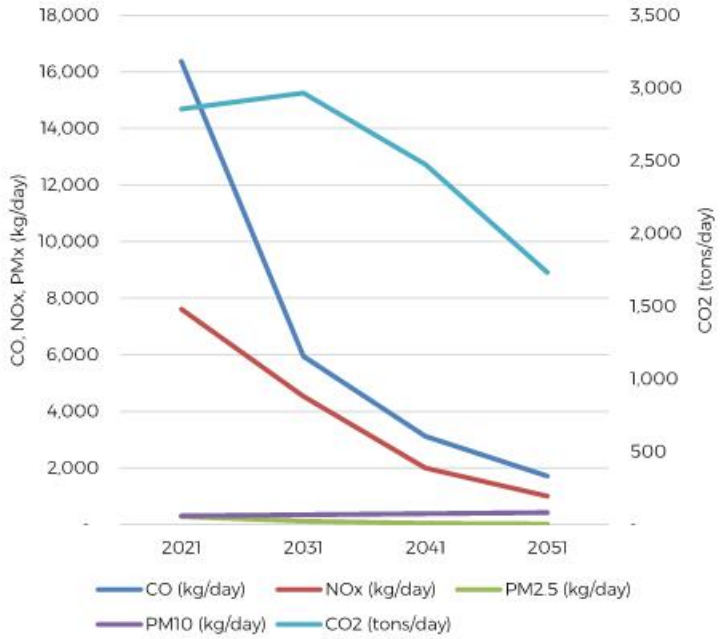


Figure 4-39: Projected Greenhouse Gas Emissions and Increased Air Pollution in Greater Christchurch from car and bus vehicle kilometres travelled[118]

Vehicle kilometres travelled (VKT) is a measure of distance that all road vehicles travelled in an area. The Ministry of Environment uses VKT as a direct indicator of the impact of road network on the environment. Figure demonstrates that without significant intervention, a continued perpetuation of the high car mode share in Greater Christchurch will result in significant increase in VKT in the future, especially light fleet, growing from 11 million VKT per day in 2021 to 15 million VKT per day in 2051. This does not align with the Government's emissions reduction target of reducing total VKT travelled by light fleet by 20% by 2035, and further highlights the contribution of Greater Christchurch's road

[115] Canterbury Regional Public Transport Plan 2018-2028, p.13
[116] Policy 4.3, Canterbury Regional Public Transport Plan 2018-2028, p. 32
[117] https://www.cnbc.com/2021/07/26/lifetime-emissions-of-evs-are-lower-than-gasoline-cars-experts-say.html
[118] QTP (2021). CTM v21 Update: Greater Christchurch Spatial Plan Land Use, 2021

network to worsening climate change and environmental outcomes and the need for significant intervention (such as greatly enhanced PT).

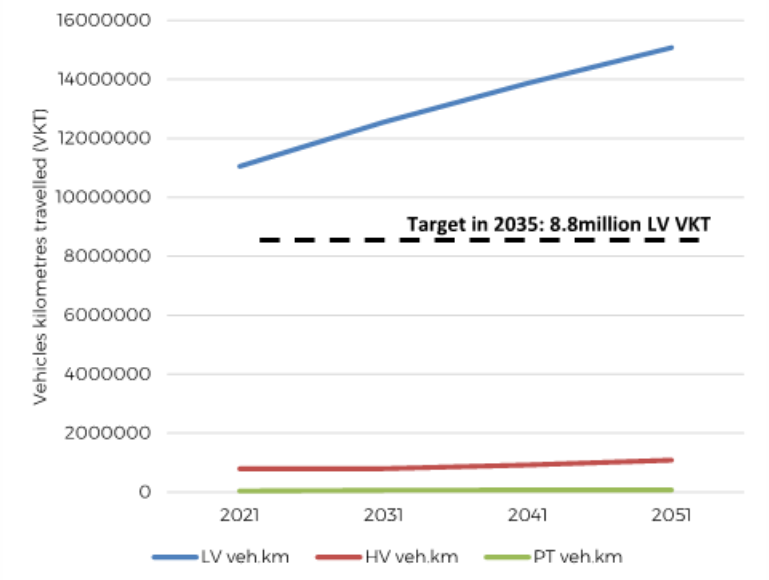


Figure 4-40: Modelled Vehicles Kilometres Travelled per day in Greater Christchurch from light (LV), heavy (HV) and PT (PT) over time

Vehicle emissions include particulates, carbon monoxide, carbon dioxide, nitrogen dioxide, sulphur dioxide and benzene. These emissions are damaging to both people's health and wellbeing, and the environment, with the adverse effects greater in areas with high traffic and congestion rates. A more diversified mode share, with higher PT patronage, lower single user vehicle occupancy and an urban form that requires less travel distance has the potential to be achieved through MRT.

The mode shift benefits framework from 'Keeping Cities Moving' demonstrates the benefits of mode shift including, denser living which leads to a lower emissions city (Figure)[119].

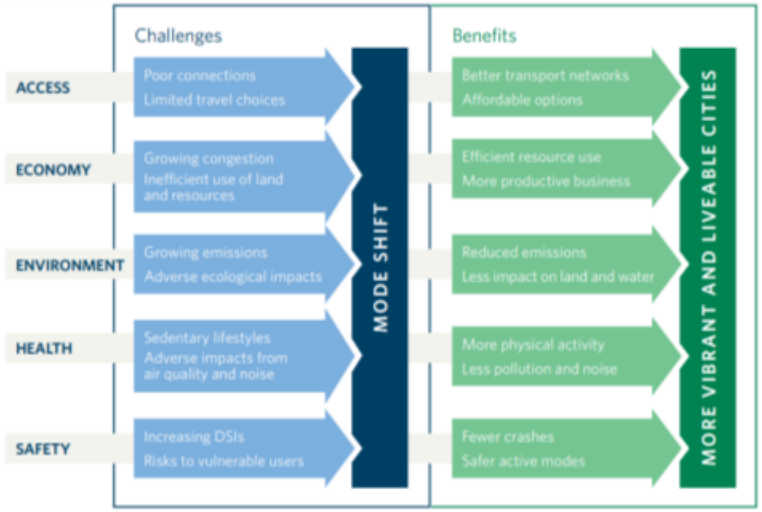


Figure 4-41: A benefits framework for mode shift[119]

Lastly, high car dependency also contributes to negative environmental outcomes through the construction and operation impacts of roading infrastructure. A reduction in car usage and consequently road infrastructure construction and operation will result in fewer harmful effects on water, biodiversity, and resource consumption from expansion of roads[120]. Further the extent of urban area dedicated to moving and storing vehicles is also a poor environmental, social and urban amenity outcome.

4.2.3.5 Worsening Public Health Outcomes

Transport can impact health because of road traffic injuries and deaths, air pollution, noise pollution, social interactions, and level of physical activity. For example, walking, cycling, and PT encourage greater levels of physical activity in everyday life, which is known to improve health outcomes.

Transport emissions impact poorly on human health. Particulate matter exposure can lead to chronic respiratory and cardiovascular diseases, some cancers and low birthweight, while nitrogen dioxide is associated with acute respiratory effects such as asthma symptoms, especially in children.

[119] Waka Kotahi, Keeping Cities Moving, Figure 4, p. 15

[120] https://www.nzta.govt.nz/assets/resources/keeping-cities-moving/Keeping-cities-moving.pdf p.9

In 2012, the EHINZ (Environmental Health Indicators New Zealand' estimated that there were 650 deaths because of road transport (in addition to crashes this includes deaths due to particulate matter (PM10), nitrogen dioxide exposure and noise pollution). A further 40 deaths were estimated to have occurred as a result of the lost opportunity for increased physical activity during transport[121]. Having fewer vehicles on the roads reduces noise and harmful emissions, increasing public health benefits.

Mental health benefits are also associated with transport. A lack of transport options (including PT) can reduce access to opportunities and create social isolation.

More sedentary lifestyles contribute to increasing levels of obesity and chronic diseases, and transport related air pollution and noise that can harm public health. Using PT in comparison to the private vehicle can increase physical activity through the first and last mile journeys which typically require one to walk.

PT is also a very safe way to travel. The NZ Ministry of Transport considers that car drivers are nine times more likely to be injured in a crash than bus passengers, so moving them by bus lowers the overall crash risk per person per kilometre travelled[122].

In summary as outlined by 2010 study on PTation health benefits:

> *"High quality public transportation (convenient, comfortable, fast rail and bus transport) and transit oriented development (walkable, mixed-use communities located around transit stations) tend to affect travel activity in ways that provide large health benefits, including reduced traffic crashes and pollution emissions, increased physical fitness, improved mental health, improved basic access to medical care and healthy food and increased affordability which reduces financial stress to lower-income households."*[123]

4.2.3.6 Summary

A continued perpetuation of Greater Christchurch's high car dependency will continue to result in a low mode share for PT which will have worsening emissions and environmental outcomes. This will threaten both New Zealand and Greater Christchurch's ability to achieve its desired emissions and climate change targets. MRT has the potential to address this through helping to catalyse a greater density of land development along key corridors that are more walkable and well connected communities (encouraging greater levels of active travel and improved wellbeing), and also given the mode shift to PT will result in reduced emissions, congestion and air pollution.

4.3 MRT CHARACTERISTICS

MRT would be new to the Christchurch landscape and is the term used to describe the development of a high capacity, high-performance PT capable of moving a large number of people within largely dedicated or exclusive right-of-way route[124]s.

MRT may consist of transport infrastructures suitable for Bus Rapid Transit (BRT), Light Rail Transit (LRT), Metro rail or Commuter Rail technologies. These may perform as stand-alone modes or be integrated with different urban environments and modes.

MRT can have a very wide range of physical and operational outcomes depending on the need and constraints, but typically has the following characteristics:

- Dedicated transport corridors that ensure high-quality, high reliability, premium level transit services
- Provides exclusivity, priority and/or segregation of transit vehicles from private vehicles
- Enables and supports transit oriented urban development through land value uplift that can help implement strategic intensification and place-shaping strategies
- Providing customers with a premium PT service preferred over the use of the private vehicle

Building on the latter point, a key purpose of the an MRT system is to achieve mode shift and attract new users, particularly from cars. To achieve this, the service must:

- Provide competitive journey times – particularly compared to alternatives like private cars
- Be reliable and have a narrow range of journey times as well as even headways to provide consistent wait times

[121] https://ehinz.ac.nz/indicators/transport/about-transport-and-health/
[122] https://www.nzta.govt.nz/assets/resources/public-transport-information-pack/docs/public-transport-information-pack-no-1.pdf
[123] https://apta.com/wp-content/uploads/Resources/resources/reportsandpublications/Documents/APTA_Health_Benefits_Litman.pdf
[124] Fouracre.P, Dunkerley.C, Mass Rapid transit systems for cities in the developing world, Transport Reviews, 2003,Vol.23,No.3,P299-310

- Be legible and easy to understand. This is key to attract new users as well as unfamiliar and infrequent users and should involve a simple service pattern
- Provide a good ride quality for comfort and user experience
- Provide confidence and reassurance to users through information pre and during journeys
- Provide for safety and personal security of customers in journeys to stations, at stations and in transit
- Be easy to access. This can mean a wider range of things but as a minimum should consider:
  - Access to stations by a variety of modes
  - Buying tickets and fares – off vehicle
  - Level boarding
  - All-door boarding

Another key purpose of rapid transit is to help achieve land use objectives by supporting density in high priority locations. This requires:

- Consideration of station locations to align with prioritised land use planning and potential
- Consideration of station precincts and urban form in the detailed location, access modes and facilities provided for and
- Integrated planning and identification of opportunities to enhance land use and transport outcomes

MRT as a city-shaping intervention can help optimise the existing high-frequency bus network and act as a pathway to developing new emerging PT technologies. The system should have the potential to perform within different urban environments, operating conditions and network structures and have different benefits depending on the environment. It can be designed to match the desired travel patterns for people accessing various employment sectors.

The implementation of MRT can result in a range of potential quantifiable and qualitative benefits relating to several characteristics associated with transport, land use, environment, economic and system performance within the city. The extent of the benefits realised will also be dependent on a number contributing factors such as the amenity and quality of residential and mixed-use areas.

4.3.1 Strategic outcomes alignment

The section provides an overview of the strategies and outcomes sought by the investment partners – Waka Kotahi, ECan, CCC, SDC and WDC that are of relevance to the proposed PT investment. Strategies identified and reviewed for their context and alignment are included in Figure .

Overall, there is strong support for the sort of outcomes that MRT can provide in the National policy framework, particularly in the areas of:

- Reducing emissions
- Access to opportunities
- Choice of travel
- Achieving mode choice (including active modes through land use change)
- Supporting compact urban form and reduced car relianceIntensification of existing urban form and
- Economic Prosperity - Efficient flow of people and products

Further in the local policy framework there is also strong support:

- There are aspirations to reduce carbon emissions and have a more sustainable urban form. CCC seek to achieve a 50% reduction in greenhouse gas emissions (excluding methane) by 2030
- There is a desire to strengthen the central city
- A strategy to emphasise redevelop and intensify the existing urban area around Key Activity Centres, District Town Centres and along core transport corridors
- Our Space 2018-2048 acknowledges that with significant population growth in Greater Christchurch, there will be challenges for travel unless there is a significant shift in how the region thinks about and approaches transport. The CRLTP supports this further noting that travel time reliability is compromised by a high reliance on single occupancy vehicles; and a lack of supporting infrastructure, network management, and transport alternatives; earthquake damage/post-earthquake recovery activities; and population change, changing land use patterns
- Development along the periphery in greenfield development (northern and south-western parts of the city, and in satellite towns – Rolleston, Lincoln, Rangiora and Kaiapoi);
- A desire to align transport and land use. Acknowledgement that a settlement pattern approach with mixed use nodes that encourages greater urban densities, particularly along key PT corridors provides the

greatest opportunity for people to live near proposed new rapid transit routes, increasing the likelihood and attractiveness for people to adopt these transport modes

- Aspiration for greater mode share, reduced requirement for a private vehicle and more competitive performance
- A referenced strategy for MRT corridors and
- Acknowledgement that MRT can be used as a "catalyst" for housing and redevelopment (i.e. Our Space refers to investment in rapid transit as a means for encouraging higher density development along high demand corridors so more people will be able to access jobs, services, recreation and education without necessarily having to rely on a private vehicle)

It is relevant to note that the desire for corridor development and intensification of the central city core has the potential for conflict given different investment objectives that these present. In addition, achieving the desired densification (infill as opposed to greenfield development) is likely to be challenging due to economics of scale, multiple landowners, existing built form and infrastructure limitations).

Further details of the relevant goals contained in these strategies are outlined in Table 4-6 and in Appendix E – Key Policies and Objectives Related to MRT.

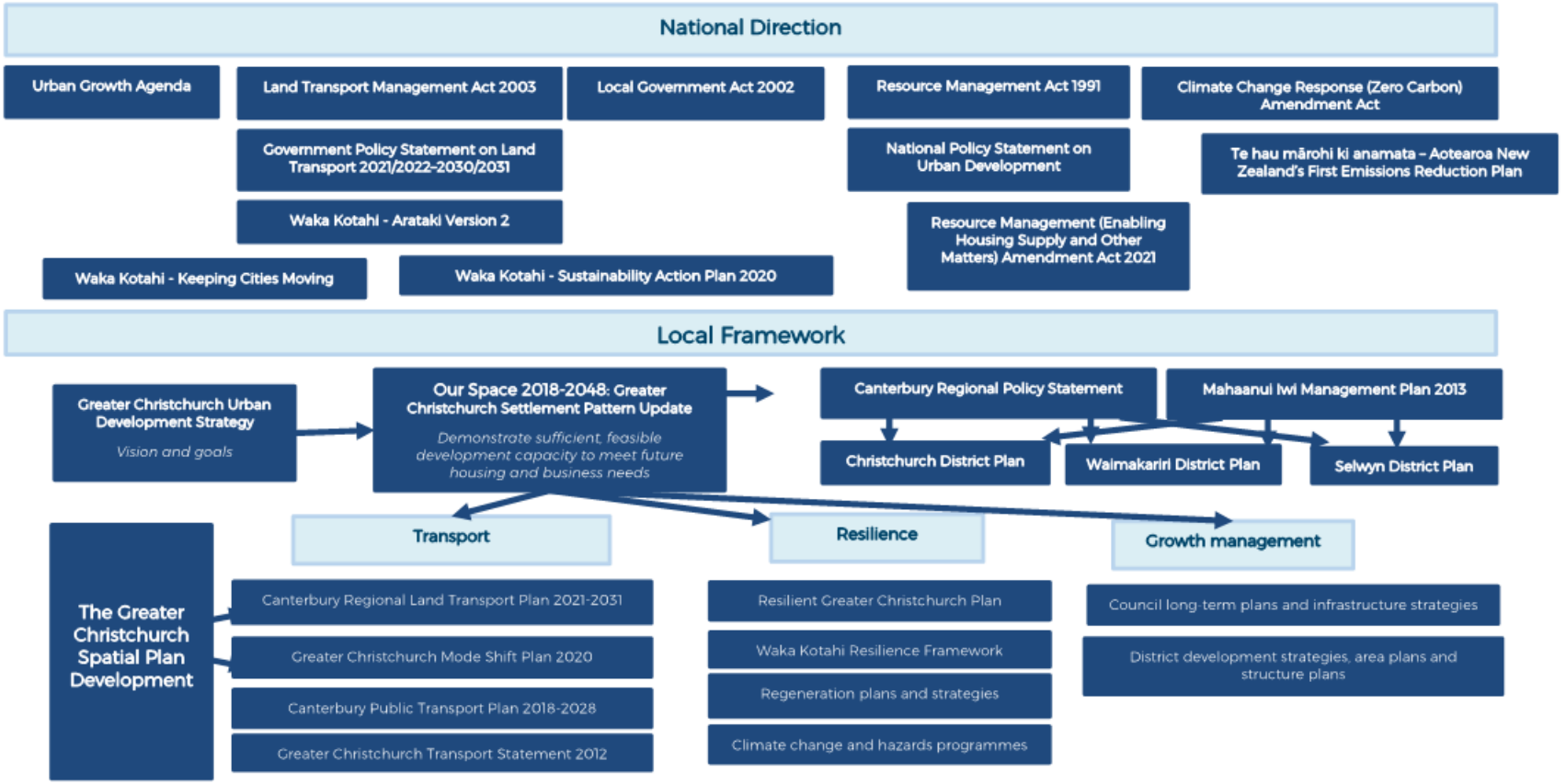


Figure 4-42: Overview of strategic framework

The Government Policy Statement on Land Transport 2021/2022-2030/2031 (GPS) specifically notes that to achieve the desired outcomes sought (which include an increased share of travel by PT and active modes, reduced greenhouse gas emissions, reduced air and noise pollution and more available and accessible PT modes and improved access to social and economic opportunities) that the work underway on developing a PT system in Christchurch needs to continue[125].

Table 4-6: MRT Strategic Outcomes

National / Regional	Strategy/ Plan	Description	MRT Alignment
National	Ministry of Transport Government Policy Statement on Land Transport 2021/2022-2030/2031	The four strategic priorities of the GPS 2021 are: ▪ Better travel options ▪ Safety ▪ Climate change ▪ Improving Freight Connections	Notes that high capacity and rapid transit systems and multimodal travel options in urban centres will help to manage road congestion and enable efficient flows of people (and products).
National	Ministry for the Environment National Policy Statement on Urban Development 2020	The NPS -UD has been developed to recognise the national significance of well-functioning urban environments that enable all people and communities to provide for their social, economic, and cultural well-being, and for their health and safety, now and into the future.	The NPS-UD emphasises the relationship between density and MRT and directs all Tier 1 centres (incl. Christchurch) to establish minimum 6 storey building heights in metropolitan centres[126] and within a walkable catchment of existing and planned rapid transit stops. This is to help meet the objective to provide for intensification so that all urban environments provide for greater intensity in locations of high demand and accessibility.
National	Resource Management (Enabling Housing Supply and Other Matters) Amendment Act 2021	The Resource Management (Enabling Housing Supply and Other Matters) Amendment Act 2021 (EHS Act 2021) was introduced in 2021 to support greater housing density. Ultimately it seeks to enable three homes of three storeys in height to be built on most residential sites in Tier 1 centres (i.e. the Greater Christchurch area) without the need for resource consent. The Tier 1 District Councils (CCC, SDC and WDC) are required to update their District	The EHS Act will support intensification of the Greater Christchurch urban area by removing and or reducing the need for resource consent to intensify existing residential sites. This will likely lead to a significant increase in zoned housing capacity.

[125] https://www.transport.govt.nz//assets/Uploads/Paper/GPS2021.pdf p.19

[126] Metropolitan Centres are not defined in the NPS-UD. However **rapid transit service** is defined as any existing or planned frequent, quick, reliable and high-capacity public transport service that operates on a permanent route (road or rail) that is largely separated from other traffic. A **rapid transit stop** means a place where people can enter or exit a rapid transit service, whether existing or planned.

National / Regional	Strategy/ Plan	Description	MRT Alignment
		Plans to give effect to this by August 2022.	
National	Ministry for the Environment Climate Change Response (Zero Carbon) Amendment Act	The Climate Change Response (Zero Carbon) Amendment Act 2019 provides a framework by which New Zealand can develop and implement clear and stable climate change policies that contribute to the global effort under the Paris Agreement to limit the global average temperature increase to 1.5° Celsius above pre-industrial levels and allow New Zealand to prepare for, and adapt to, the effects of climate change.	MRT has the potential to help catalyse a greater density of land development along key corridors that are more walkable and well connected communities (encouraging greater levels of active travel and improved wellbeing), and also given the mode shift to PT will result in reduced emissions, congestion and air pollution.
National	Te hau mārohi ki anamata: Towards a productive, sustainable and inclusive economy – Aotearoa New Zealand's First Emissions Reduction Plan 2022	Te hau mārohi ki anamata (the ERP) was published in May 2022 as New Zealand's first emissions reduction plan. It was published by the Minister of Climate Change under section 5ZI of the Climate Change Response Act 2002[127]. It is the first statutory plan, under the Climate Change Response Act, to require the Government to act to reduce emissions right across the economy and support all New Zealanders to make the most of the transition and seize the opportunity to lower the cost of living and improve living standards. It outlines that major actions planned to reduce emisssions, including increasing access to electric vehicles (EVs), beginning the process of decarbonising heavy transport and freight and helping more people to walk, cycle and take PT.	Specifically, the ERP seeks to reduce reliance on cars and support people to walk, cycle and use PT including by improving the reach, frequency and quality of PT and making it more affordable for low-income New Zealanders.

[127] https://environment.govt.nz/assets/publications/Aotearoa-New-Zealands-first-emissions-reduction-plan.pdf

National / Regional	Strategy/ Plan	Description	MRT Alignment
Regional	Land Use Recovery Plan 2013 (LURP)	The Land Use Recovery Plan 2013 is a statutory document prepared under the Canterbury Earthquake Recovery Act 2011 in response to the 2010 and 2011 Canterbury earthquakes as a way forward for Greater Christchurch's recovery from the earthquakes	The LURP identifies that changing travel patterns since the earthquake have placed significant stress on transport infrastructure. Making it easy for people to walk, cycle and use PT also supports a compact urban form, which supports safe, walkable communities which also have positive health and social outcomes".
Regional	Greater Christchurch Spatial Plan	The Greater Christchurch Partnership has embarked on the development of the Greater Christchurch Spatial Plan (GCSP). While not yet finalised, the GCSP will consider how a possible future population of 700,000 can be successfully accommodated in Greater Christchurch (representing 170,000 or 30% more than the current population of Greater Christchurch) by 2050. The GCSP will be developed to give effect to relevant national policy direction, including the Urban Growth Agenda; the government policy statements on housing and urban development, and land transport; the NPS-UD; and the emerging Emissions Reduction Plan for Aotearoa New Zealand. It will also be cognisant of the emerging directions from the resource management system reforms, especially from the proposed Strategic Planning Act which, has so far indicated that the development of long - term regional spatial strategies will be required. The GCSP seeks to prioritise sustainable transport choices to move people and goods in a way that significantly reduces greenhouse gas emissions and enable access to social, cultural and economic	The GCSP sits within a wider local, regional and national context. This MRT IBC and the GCSP are strongly interdependent, recognising the importance of greater intensification of land use to reduce dependence on car travel, house people more sustainably and affordably, and realise the benefits of economic agglomeration, and the need for intensification to support the feasibility of significant transport infrastructure investments, such as MRT.

National / Regional	Strategy/ Plan	Description	MRT Alignment
		opportunities. It looks to set out how Greater Christchurch provides community wellbeing and prosperity into the future in the context of population growth and climate change.	
Regional	Our Space 2018-2048: Greater Christchurch Settlement Pattern Update	Our Space is owned by the Greater Christchurch Partnership. It represents a cohesive plan update to the Urban Development Strategy that charts Christchurch's future as it grows to a projected 640,000 people by 2048.	Our Space identifies that population growth will start to constrain the current freedom and independence enjoyed by Cantabrians across the Greater Christchurch area during travel. It supports investment to achieve an enhanced PT system and improvements along key transport corridors. It acknowledges that half of all the jobs in Christchurch are and will likely continue to be located in the corridor between the Central City and Hornby, and nearby suburbs suggesting that the provision of rapid transit (busways or light rail) along this corridor would make it easier for people to reach these employment opportunities and also catalyse housing development, so more people can have the opportunity to live closer to where they work.
Regional	Canterbury Regional Land Transport Plan 2021-2031	The CRLTP outlines the current state of our regional transportation network and the challenges we face now and in the future. It outlines seven key strategic objectives to help support the 30 year strategic vision of providing "*all transport users with sustainable options that move people and freight around and through our region in a safe and efficient way that enables us to be responsive to future challenges.*" The seven strategic objectives are - improved advocacy; - better freight transport options; - reduced harm; - mode shift; - shared prosperity; - reliable and consistent journeys; and	The CRLTP refers to the PT Future programme in which this MRT IBC sits as a consideration for what further investments should be be made for PT in Greater Christchurch. It outlines that the MRT package of work in the pgramme is a "*transformational package that lays the foundation for significant urban development and land use changes and transformation in transport accessibility. In 2021, work is underway to identify and protect the corridors and to enable policy changes that support intensification and regeneration in key areas. The implementation of MRT is currently mode agnostic and it is anticipated that the MRT business case will determine the timing and methodology for MRT implementation.*"

National / Regional	Strategy/ Plan	Description	MRT Alignment
		- resilience.	
Regional	Greater Christchurch Transport Statement 2012	The Greater Christchurch Transport Statement (GCTS) 2012 provides an overarching framework to enable a consistent, integrated approach to planning, prioritising, implementing and managing the transport network and services in the Greater Christchurch area.	The GCTS recognises that people need to travel for business, work, education, shopping and social purposes. They want to do this safely and efficiently, with choices across a range of modes. It identifies PT as being one of the five most pressing strategic transport issues needing partnership action in the short-term and identifies the investigation and protection of future PT options as part of this. CCC publicly released a draft of the Christchurch Transport Plan 2022 in August 2022 which will replace the 2012 plan. Community consultation on ths plan is scheduled for the first half of 2023. Whilst still in a very early stage this will include actions to support the creation of a safer transport system, aligning with the national Road to Zero strategy, and providing policy direction on how our transport system can support sustainable urban growth.
Regional	Canterbury Regional Public Transport Plan 2018-2028	The vision of the CRPTP is to provide innovative and inclusive PT that sits at the heart of the transport network and supports a healthy, thriving, and liveable Greater Christchurch.	One of the CRPTP aims is to provide a catalyst for Central City regeneration, and regional housing and business development, by protecting and investing in rapid transit corridors.
Regional	Greater Christchurch Mode Shift Plan	The Greater Christchurch Mode Shift Plan responds to a request from the Government for all high-growth urban areas to produce regional mode shift plans to describe how an integrated and cohesive approach to delivering mode shift can be achieved.	MRT has the potential to help support mode shift in Greater Christchurch.

4.4 BENEFITS AND INVESTMENT OBJECTIVES

4.4.1 Benefits

The benefits of solving the problem statements correspond to the benefit statements identified in the ILM:

- Greater PT capacity along the transit corridor that can accommodate growth and support high density development around key nodes (33%)
- Improved access to jobs, education and social opportunities (33%).
- Transition from single occupancy car use to lower-carbon transport options, reducing emissions (33%)

The benefits of solving the problems are broadly summarised below:

4.4.1.1 Health Benefits

Creating more walkable, well connected communities will have health benefits not only due to reduced congestion and air pollution, but as mode shifts encourages towards more active travel, and improved wellbeing.
Further support towards a more compact, dense, urban form will reduce low density residential sprawl, with low density urban form and sprawl identified as prominent environmental influencer of obesity and poor health[128][129]. MRT provides an opportunity to catalyse a new form of urban development that would create a denser urban form.

4.4.1.2 Environmental Benefits

A reduction in private vehicle mode share and a higher density urban form (reduced trip distance between residential areas and opportunities) will provide benefits in terms of reduced emissions, and reduced congestion contributing to poor urban environments and amenity.

MRT enables shift away from single occupant car use into lower-carbon transport options, reducing emissions.

4.4.1.3 Liveable and Vibrant Communities

There are health and wellbeing benefits associated with improving the liveability of places. Liveability is broadly defined but urban liveability is generally associated with communities that are safe, attractive, connected, convenient, provide good accessibility choice to opportunities (education, employment, social and recreational), and high levels of health, recreation and community services.

4.4.1.4 Transport and Access

Better access to opportunities (education, employment, services and recreation) has the potential to be achieved through reduced road network congestion, and additional transport mode choice.

MRT enables greater PT capacity in a corridor that makes room for growth and supports high density development around key nodes. This will afford more people the opportunity to access key economic and social opportunities without the need to drive.

4.4.1.5 Economic Benefits

Improving accessibility to employment opportunities and reducing time lost due to travel (i.e. stuck in congestion) will contribute positively to productivity, labour force participation, and competition. Further changes to a more urban form will result in agglomeration benefits and MRT has potential for land value impacts (the scale of which would be associated with transit mode and proximity to any stations/stops)[130].

MRT has potential to be a faster, more reliable transport option, appealing to more users. It can enable more residents to access jobs, education and social opportunities, particularly within the central city, thereby improving the economic performance of Greater Christchurch.

4.4.1.6 Enhanced Customer Experience

One of the benefits of improving PT through the provision of MRT will be an improved and enhanced customer experience on PT. A dedicated right of way network for MRT would enable PT to be insulated from traffic congestion and provide an enhanced customer experience through a reliable service that is independent from the adverse effects associated with worsening road congestion.

[128] Congdon, Peter (2019) Obesity and urban environments. Int Jnl Environ Res Public Health, 16(3), 464
[129] Nayha, Simo, et al (2013) Body mass index and overweight in relation to residence distance and population density: experience from the Northern Finland birth cohort 1966. BMC Public Health, 13, 938

[130] Waka Kotahi. Emerging Technologies for Rapid Transit – Review of Emerging Technologies: Evaluation of integrated delivery models for rapid transit and housing. Figure 4

MRT has a role in solving the problems outlined in Section 2 and in identifying the benefits outlined above. Implementation of MRT can result in a range of potential quantifiable and qualitative benefits relating to several characteristics associated with transport, land use, environment, economic and system performance within the city.

MRT is a recognisable mode differentiated as either rubber tyre or fixed rail technology and would be integrated into and/or alongside the existing urban form and PT network structure of Christchurch. It can provide a dedicated transport corridor as a 'backbone' for high-quality, premium level transit services that provides exclusivity, priority and segregation of transit vehicles from private vehicles ensuring a higher level of reliability.

MRT as a city-shaping intervention can act as a catalyst for urban development and land value uplift, aligning land use planning with population growth in regions to support higher density urban regeneration in key locations. Support towards a more dense, compact and connected urban form will result in a healthier form.

MRT can also help optimise the existing bus network, providing genuine travel choices for people living in high priority corridors and areas of density.

Lastly, MRT can have positive health benefits through encouraging passengers to mode shift from private vehicles to PT (reducing emissions and air pollution) and also encouraging a more compact urban form that supports active transport.

4.4.2 Investment objectives

The Project Team developed Investment Objectives that built from the Investment Logic agreed for the project. The investment objectives, their relationship to the agreed problems and benefits and their relative weighting are shown in Table :

- Increased proportion of the population within key prioritised locations and along identified transport corridors within Greater Christchurch with improved access to Christchurch's Central City by 2051;
- Improved journey time and reliability of PT services relative to private vehicles within Greater Christchurch by 2051; and
- Reduce emissions from transport movements across Greater Christchurch by 2051.

4.4.3 Key performance indicators (KPIs)

Table outlines a set of KPIs, which have been developed to align with the Investment Objectives confirmed through the ILM. The KPIs can be used to assess the extent to which each objective could be realised. They should also be used to evaluate the success of the recommended package once it has been implemented.

The measures will need to be refined through the options development phase. It is noted that the areas which will be referred to as key prioritised locations and/or corridors within the KPI's are yet to be agreed upon with all stakeholders.

Table 4-7: Problem Statements, Benefits, and Investment Objectives

Problem Statements		Benefits	Investment Objectives
1	Current and forecast settlement patterns perpetuate high car dependence, resulting in increased transport costs (33%)	Greater PT capacity along the transit corridor that can accommodate growth and support high density development around key nodes (33%)	Increased proportion of the population within key prioritised locations and along identified transport corridors within Greater Christchurch with improved access to Christchurch's Central City by 2051 (33%)
2	The PT system is not sufficiently attractive to compete with private vehicles (33%)	Improved access to jobs, education and social opportunities (33 %)	Improved journey time and reliability of PT services relative to private vehicles within Greater Christchurch by 2051 (33%)
3	Continuation of the current transport system will fail our climate change responsibilities and lead to poorer public health outcomes (33%)	Transition from single occupancy car use to lower-carbon transport options, reducing emissions (33%)	Reduce emissions from transport movements across Greater Christchurch by 2051 (33%)

Table 4-8: Key Performance Indicators (KPIs)

	Investment Objective	Key Performance Indicator	
1	Increased proportion of the population within key prioritised locations and along identified transport corridors within Greater Christchurch with improved access to Christchurch's Central City by 2051	KPI 1	Change in accessibility to and from the Central City
		KPI 2	Change in access to opportunities from prioritised locations
		KPI 3	Change in development potential
2	Improved journey time and reliability of PT services relative to private vehicles within Greater Christchurch by 2051	KPI 2	Change in access to opportunities from prioritised locations
		KPI 4	Shift in trips to PT and active modes
		KPI 5	Change in journey times and reliability by PT and private vehicles
		KPI 6	Ability to integrate efficiently and effectively with wider PT
3	Reduce emissions from transport movements across Greater Christchurch by 2051	KPI 7	Change in emissions from transport and improved environmental outcomes

4.5 OPPORTUNITIES, ISSUES AND CONSTRAINTS

4.5.1 Opportunities

Opportunities for further investigation with the investment and project partners and stakeholders are:

- Sustainability across different stages of the project: there are opportunities to explore a greater sustainability focus in the options development and assessment process, which may consider broad environmental outcomes, climate change, transport carbon emission reduction, sustainable transport and technologies
- Behaviour change: there are opportunities to promote and incentivise behaviour change at an accelerated rate to aid mode shift
- Catalyse urban form and development: there are opportunities for various MRT routes and modes to act as a catalyst for development of denser urban living along certain corridors
- Support intensification and high-density development: there is an opportunity to revise and further increase the aspirational residential densities (hh/ha) sought across various zones in Greater Christchurch. There is provision to aspire to greater residential densities in key locations and along key corridors, that are supported by good access
- There are opportunities for improved urban amenity in the street scape and public realm in proximity to rapid transit stops and/or stations
- Walking and cycling facilities: the provision of walking and cycling facilities to increase connectivity to, from and within the study area will complement any investment in higher standard PT
- Future proofing: There are opportunities to identify land/corridors to support an MRT system prior to the transport demand triggering the need for an MRT. This provides an opportunity to inform future land development and urban form now in anticipation of investment and purchase land now rather than waiting till investment becomes time critical.
- Scalable: MRT can be designed to be fit for purpose for the Christchurch context. The mode and the nature of any MRT corridor proposed needs to be refined to reflect the specific local constraints and benefits sought. For example, even within bus rapid transit there is a broad subset transit, ranging from what is commonly termed "BRT-lite", with prioritisation of road space for bus services and predetermined stops, to more permanent systems with exclusive right-of-way, high capacity buses, fare collection prior to boarding and platform-like stops at fixed locations[131].
- Prioritisation: There is an opportunity to confirm prioritisation of key locations and corridors for Greater Christchurch to provide clearer guidance on key locations (there are currently 14 priority locations considering the Central city and 13 KAC's) in promoting a connected network of key destinations. Criteria can be developed in conjunction with the MRT IBC, Greater Christchurch 2050 and the CCC Spatial Planning work. This is likely to include consideration of redevelopment opportunities, density of employment, extent of crown own land and Kāinga Ora land, land capitalisation ratios, hazards and resilience, consideration of connected nodes/communities and existing and potential amenity value.
- Enhancing public transport linkages to MR873.

4.5.2 Issues and Constraints

The following sections describe economic, financial, political, social, environmental, transport, cultural, stakeholder and other issues and constraints which could influence the scope of the project outcomes and outputs.

Issues are uncertainties / risks that may not be resolved during the business case development stage, while constraints are limiting factors such as time, cost, resources etc.

4.5.2.1 Issues

Table 4-9 describes issues and uncertainties that may influence the outcomes of this IBC. The uncertainty log aims to address risk and demonstrates the need for close monitoring and management.

[131] The Joint Modelling Application Centre Board, FINAL REPORT AT Emerging Technologies for Rapid Transit - Part One: Part One, p. 19

Table 4-9: Issues/Uncertainty Log

Factor	Timing	Uncertainty	Impact	Comments
Factors affecting demand				
Degree of travel time reliability across all modes	Ongoing	More than likely	Significant	Impacts the level of confidence customers have in the reliability of the transport network which will impact the uptake of PT services.
Desired population growth targets and spatial direction for intensification	Ongoing	More than likely	Significant	The nature of any new urban growth strategy identified by Christchurch 2050 will influence the anticipated growth and travel projections within Greater Christchurch. This requires careful monitoring to ensure the projected demand on the transport network and change in land use patterns is met by enough capacity.
Factors affecting supply				
New legislation and policy direction enforce the pace of travel behaviour change	Political timeframes – ongoing	Certain –	High	Central or local government policy may cause changes in infrastructure investment. In February 2021, the Government announced it would repeal the resource management act (RMA) and enact a new legislation based on the recommendations of the Resource Management Review Panel. The proposed new legislation includes three proposed new pieces of legislation to replace the RMA. The proposed Natural and Built Environment Act (NBEA) will be the primary piece of legislation in the reform package supported by the Strategic Planning Act (SPA) and Climate Adaptation Act. An exposure draft of the NBEA was released June 2021 with submissions closing August 2021. The fully developed bill is to be introduced to the house in 2023 with a final round of public feedback occurring shortly after that. The SPA will be introduced to parliament at the same time. Government intends to have both bills enacted before the end of this parliamentary term.

There remain many uncertainties that should be monitored over the progression of this business case including the impact of COVID-19 on working from home and travel demand, the scale and growth of population and employment in Greater Christchurch and potential shifts in government transport priorities.

4.5.2.2 Constraints

Identification and Agreement of Key Priority Locations

The current land use planning framework identifies a large number of key priority locations within Greater Christchurch and MRT by its nature will prioritise some of these further through the nature of any selected corridor chosen. The investment partners are aware that MRT will identify some 'winners' for further development and investment and are working together to minimise any challenges associated with this.

NPS -UD Policy 3 Implications

It is noted that the NPS-UD 'Policy 3' now directs that within Greater Christchurch building heights of at least six stories should be enabled within the walking catchment from any existing or planned rapid transit stop. Given this could substantially change the built form within key locations in Christchurch from their current land form and character there may be public opposition to the concept of planned MRT. For example, this Policy would direct SDC to enable six storey building heights within the walking catchment of any potential planned MRT stop.

Misalignment with Other Projects

There is the potential for misalignment of the direction and timing of this IBC and other projects in the study area (e.g. the outcomes of GCSP). Interface issues may arise if the timing and staging of any proposed works do not integrate with the planning for the other projects, for example the growth aspirations and urban spatial form sought by Christchurch 2050 needs to be consistent with any development that would be catalysed by investment in an MRT corridor.

There is currently a high level of uncertainty around the timing for various investigations, funding and delivery of projects led by the investment partners. The investment partners are, however, aware of the challenges and are working together to minimise them.

Manawhenua Position

The Mahaanui Kurataiao (March 2023) report sets outs the interests in, and position of, manawhenua on the route options.

Any form of public transport service, including MRT, that involves the need to widen the Woodend-Rangiora Road, creates the potential for taking of Māori Land. MRT also has the potential to reduce accessibility between MR873 and the wider transport network by removing local road connections. For these reasons it is fundamentally opposed by manawhenua.

MRT is also potentially a factor supporting the expansion of further urban development over wāhi tapu and encroachment on ngā wai in the Woodend/Ravenswood locality. Given this fundamental opposition, the options for MRT are limited in this locality. Noting that Māori Reserves are identified as Priority Development Areas in the Greater Christchurch Spatial Plan, the challenge is to support future development of and access to Māori Land whilst ensuring it is not reduced in area by the taking of land for public infrastructure purposes.

Covid 19

The unprecedented global impact of the once in a hundred-year COVID-19 pandemic has been considered by Waka Kotahi in relation to the effects that the pandemic has had to date on PT, and its projected long-term effects. Across all geographies, PT has declined the most of all modes during the pandemic. In international examples, rapid transit demand has recovered faster than overall PT demand; contrarily, in Auckland in June 2020 rapid transit recovery had been slower.

A report has been undertaken providing an evidence-based view of the likely recovery of demand for rapid transit in Auckland, given the importance of rapid transit in the Government Policy Statement on Land Transport 2018/19 – 2027/28.

It notes that in Auckland, employment forecasts by PWC suggest there will be no change in employment numbers in the city centre. Instead the Working From Home (WFH) trend is expected to result in a long term shift in the mix of industries concentrated in the city centre as remote working makes way for firms that were previously priced out of city centre office space (with total trips remaining constant over time)[132].

The report concludes that during the initial stages of recovery, PT mode share is projected to fall due to increased use of private vehicles and active modes, public anxiety associated with using PT and lower numbers of city centre commuters. However, as activity in urban centres increases and public anxiety

[132] https://www.nzta.govt.nz/assets/planning-and-investment/arataki/docs/waka-kotahi-rapid-transit-covid-19-scenarios-summary.pdf

wanes, private vehicle mode share is expected to decrease over time, active mode share is expected to continue to grow and RTN patronage recovery is expected to be marginally slower than the rest of the PT network. RTN share of PT is expected to recover to pre-COVID levels by 2021 in the central case[133]. While this study is Auckland focused, it demonstrates that COVID-19 is not anticipated to have lasting effects on PT (or MRT) patronage in Auckland.

[133] https://www.nzta.govt.nz/assets/planning-and-investment/arataki/docs/waka-kotahi-rapid-transit-covid-19-scenarios-full-report.pdf


ECONOMIC CASE
WSP | Aurecon | Boffa Miskell |QTP

5 DEVELOPMENT AND ASSESSMENT METHODOLOGY

Christchurch aspires to be a low-carbon city with transport viable choices, good urban amenity, strong economic performance, particularly of the central city. Public transport has a key role to play in realising these outcomes.

Hence, following a Programme Business Case (PBC) completed in 2018, the Greater Christchurch Partnership (GCP) agreed to the development of two further business cases to explore an investment programme aimed at increasing the mode share of the public transport network in Greater Christchurch.

The first business case (Greater Christchurch Public Transport Combined Business Case) recommended a programme of improvements to increase the uptake of public transport over the next decade.

The second business case (this MRT IBC) has a longer-term focus, with an outlook to 2051 in line with the planning horizon set by the Greater Christchurch Spatial Plan (GCSP) work, considering the role of rapid transit in the Greater Christchurch area. The MRT IBC has been developed in modules, with hold points at critical points to ensure alignment and a fit for purpose approach. This process is illustrated in (Figure 5-1) and outlined below.

Strategic Case: The strategic case was with a hold point at its conclusion. This provided the opportunity to check for alignment on the problems, benefits and objectives between project partners and key stakeholders. It also provided a clear direction and case for change prior to launching into scoping and undertaking the subsequent sections of the IBC. As time has progressed the Strategic Case has been updated to reflect emerging growth patterns for Greater Christchurch and other policy changes.

MRT Interim Report: Greater Christchurch Public Transport Futures MRT Interim Repot (Interim Report), as attached in Appendix G – Greater Christchurch Public Transport Futures MRT Interim Report, was completed in June 2021. It was developed after the strategic case, in advance of commencing the full IBC (i.e. this IBC). The purpose of the interim report was to test the suitability of the selected investment objectives and associated KPIs, drafted in the strategic case, to adequately inform decision makers on the impact that MRT might have against wider policy direction for the region. The interim report developed and analysed three high level corridor scenarios but it was not intended to identify a preferred solution investment. One of the conclusions of the Interim Report was that the outcomes were highly sensitive to land use forecasts and hence further work beyond this needed to be developed in close unison with GCSP. The approach and results of the Interim Report is summarised in Section 7 of this report.

Economic/Commercial/Financial/Management Cases: The third part of the overarching process was developing the work undertaken in the Interim Report further to better understand the options in more detail, undertake a comprehensive option assessment and confirm a preferred option. In addition, developing a Commercial, Financial and Management Cases in relation to the preferred option was required. This work was undertaken in coordination with the emerging direction of the GCSP. The option development and assessment process is described in more detail in the following section.

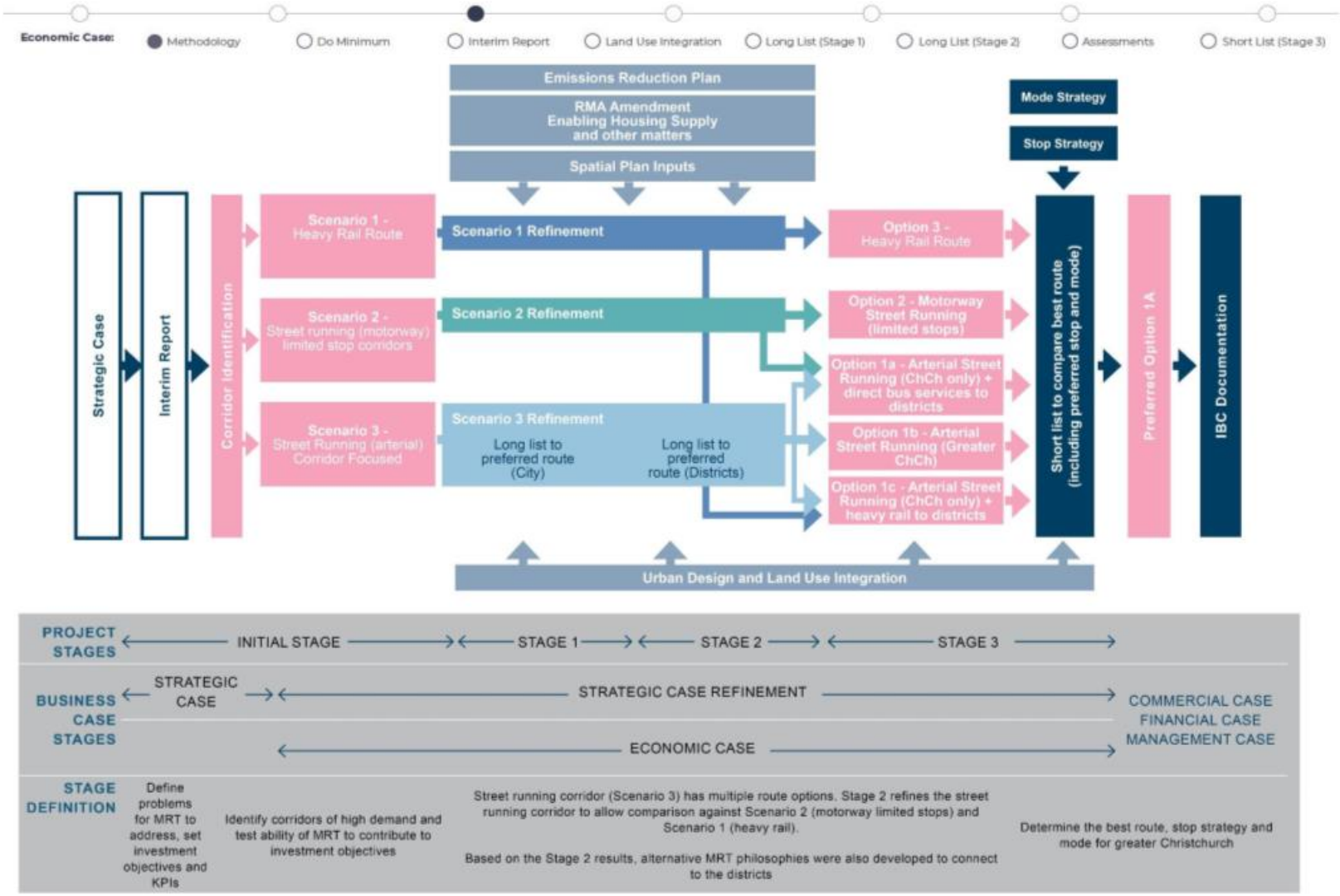


Figure 5-1: Approach for MRT Development

5.1 IBC ASSESSMENT STAGES

The option development and assessment process was broken into a number of stages as outlined in the previous figure and described below.

5.1.1 Initial Stage – Interim Report

The MRT Interim Report considers growth potential across Greater Christchurch to inform the likely corridors to be best support the initial implementation of MRT. Within the selected corridors (northern and south-western corridors of Greater City) three rapid transit route scenarios are considered further:

- **Scenario 1:** A heavy rail scenario – with limited stop opportunities but competitive travel times.
- **Scenario 2:** A street running scenario with limited stops focused on competitive travel times that generally follows the motorway corridors.
- **Scenario 3:** A street running scenario (corridor focused) with more frequent stops generally following arterial corridors, focusing on placing more households within the walk-up catchment, at the expense of travel time competitiveness.

The interim work indicated that the street running corridor scenario (Scenario 3) would have the highest public transport ridership. However, this scenario also had the most route considerations to take into account (compared to Scenario 1 and 2 where the route option is limited in general to following existing rail and motorway corridors).

The initial stages of the IBC (stages 1 and 2) focus on considering further the route complexities, option details and potential ridership of Scenario 3. **All three Scenarios** are considered further in the Stage 3 (Short List Assessment) of this IBC. In addition, the Short List assessment also considered alternative MRT philosophies, including alternative district connections and mode combinations.

5.1.2 Urban Design and Land Use Integration Assessment

During the development stages of the IBC, the GCP have been progressing the GCSP work. Inputs from this work, in particular an emerging urban form and growth strategy were integrated into the Urban Design and Land Use Integration Assessment stages and refined throughout based on the emerging spatial plan recommendations.

The Urban Design and Land Use Integration Assessment specific to MRT considered future land use integration opportunities related to relevant policy, strategic direction and the GCSP. Integration opportunities looked to align with the Greater Christchurch Partnership and Christchurch City, Waimakariri and Selwyn Councils centres hierarchy to deliver transport supportive urban form and quality public realm outcomes.

Overall, land use integration is fundamental alongside improved urban mobility to achieve strong urban form relationships within the city. Closely matching the two will create opportunities that are 'greater than the sum of the parts'. It is anticipated that MRT will require land use planning change to provide the necessary ridership numbers to make rapid transit viable in Greater Christchurch. Higher densities of land use in key areas for example will have spinoff benefits in increasing PT mode share but also in promoting active travel modes and wider sustainability objectives.

5.1.3 Long List Assessment

The long list assessment process for MRT focuses on route options. The long list process effectively commenced back at the Interim Report stage but was further picked up within the IBC to bridge the Interim Report with the short list.

Scenario 3

Stages 1 and 2 were specific to Scenario 3, developing the street running scenario further, given the number of alternative routing options available, so it could be fairly compared to Scenarios 1 and 2.

- **Stage 1:** Stage 1 of the IBC focuses on the identification of a preferred route in a northern and south-western direction within Christchurch City (i.e. between Hornby and Belfast only) under the street running scenario (Scenario 3).
- **Stage 2:** Stage 2 explores the potential extension of the street running scenario (Scenario 3) to Waimakariri and Selwyn Districts (herein called the districts). These extension options also included sections of motorway running MRT. The outcomes of the Stage 2 assessment lead to further consideration of alternative MRT philosophies to connect the districts by way of complementary Motorway and Heavy Rail routes.

The intention is for the Stage 1 (Christchurch City) and Stage 2 (District extensions) preferred routes to collate together to inform an overall preferred street running corridor scenario (Scenario 3).

Scenario 2

Scenario 2, the street running scenario which follows the motorway corridor, has limited alternative route options given the limited motorway corridor options connecting Greater Christchurch. However, there were some connection options available to the north which were considered further, refining the route option prior to the short list assessment (as detailed in Section 12.2.4of this IBC).

In addition, sections of motorway routes were also considered as part of Scenario 3 when considering routing options to connect to the districts as part of the Stage 2 assessment outlined above.

Scenario 1

Scenario 1, the heavy rail scenario follows the existing heavy rail route, hence the route options for this scenario were also limited. However, refinement and alternative rail options were considered further prior to the short list assessment. The rail optioneering is detailed further in the Supporting Assessments section of this IBC, (Section 11.3) as it was a significant piece of work undertaken to inform the short list options.

Alternative MRT philosophies

As part of the long list process, further route combination options were also developed. This considers both limited motorway bus services (direct bus services) and a limited heavy rail scenario to connect the districts in lieu of extending a street running MRT system. (as detailed in Section 10.5 of this IBC).

5.1.4 Supporting Assessments

Stop and Mode Strategy

The long list assessment investigated options from an overarching corridor route approach, hence stop locations were not included in the assessment and the options were mode agnostic. Prior to proceeding to the Short List Assessment, additional detail was undertaken to inform each option's stop and mode strategies.

Heavy Rail Strategy

Route and services based on Scenario 1 (Heavy Rail) were studied prior to the Shortlist process to define and select Heavy Rail MRT Options that could leverage on the existing rail network to best deliver of the IBC's investment objectives.

5.1.5 Short List Assessment

Stage 3

The stage 3 assessment investigates the refined scenarios 1 (Heavy Rail), 2 (Motorway Corridor) and 3 (Arterial Street Running) alongside two further MRT philosophies (e.g. direct motorway bus services or limited heavy rail). The stage 3 assessment considers all options in more detail considering routes, stops and mode and includes deeper quantitative analysis across all the KPIs informing the Investment Objectives.

5.2 MANAWHENUA

The Mahaanui Kurataiao (March 2023) report sets outs the interests in, and position of, manawhenua on the route options.

In summary, the report advises that manawhenua support the transport objectives to reduce transport omissions and improve public transport. Manawhenua are supportive of the preferred MRT route within the City and the concept of an enhanced public transport service to Rolleston and to Rangiora, although it is noted that no priority has been identified for public transport to connect with or support Tuahiwi Marae or MR873.

Fundamental opposition is however articulated to any form of public transport service that involves the need to widen the Woodend-Rangiora Road, risking the loss of Māori Land and reducing accessibility between MR873 and the wider transport network. There is also the potential for MRT to support expansion of further urban development over wāhi tapu and encroach on ngā wai in the Woodend/Ravenswood locality.

5.3 PARTNER COLLABORATION AND STAKEHOLDER ENGAGEMENT

5.3.1 Project Partners

The Greater Christchurch Partnership (GCP) Committee enable a co-ordinated approach to urban planning and joint investment in transport across the Greater Christchurch region. This partnership includes local government, manawhenua and Waka Kotahi. In 2022 the Whakawhanake Kāinga Komiti (WKK), an urban growth partnership was formed to strenghten the GCP

Committee's partnership with local government, central government (the Crown) and manawhenua. The MRT Project is a key project for the Whakawhanake Kāinga Komiti and this partnership arrangement has been utilised to discuss the progression of the IBC. This has included regular briefings and workshops with both committees.

5.3.2 Key Stakeholder Engagement

Throughout the development of the IBC ongoing engagement by Waka Kotahi has been held with key stakeholder organisations, providing updates on the project progress, option development and the emerging results:

- Christchurch City Council
- Environment Canterbury
- Selwyn District Council
- Waimakariri District Council
- Kāinga Ora
- Ministry of Housing and Urban Development
- Ministry of Transport
- Greater Christchurch Spatial Plan team

The regular MRT Stakeholder Workshops, were key workshops in which key results of the MCA analysis was shared with the participants, during each stage of analysis with feedback incorporated into the final MCA as appropriate.

Sub-group collaboration sessions have also been held with smaller groups, in particular, Christchurch City Council, Selwyn District Council and Waimakariri District Council, to address specific issues apparent to each district.

A more complete list of the meetings held across the various stakeholder groups is provided in Appendix O – Stakeholder and Public Engagement Summary.

5.3.3 Wider Stakeholder and Community Engagement

In October 2022, the Project commenced community engagement under the Greater Christchurch Urban Growth Work-Programme. The engagement phases for the programme are shown in Figure 5-2 and included engagement on the Greater Christchurch Spatial Plan and Mass Rapid Transit Indicative Business case.



Figure 5-2: Communication and Engagement Phases.

Phase 1: Pre-engagement was conducted in October 2022, the Project held one Focus Group and a Charrette session to test the appetite for a future investment in MRT in Greater Christchurch. The research tested key themes, such as the route, mode, and transit malls, to understand opinions from different users. This step informed the refinement of the preferred MRT option and clarified key messaging for the community engagement.

Phase 2: In February 2023, the engagement team for MRT and the Greater Christchurch Spatial Plan (Huihui Mai Greater Christchurch) commenced Phase 2: Public Engagement. This phase held three workshops, a webinar, youth workshops and four community events.

Throughout February and March feedback responses were also received via an online public survey. A formal summary of the responses received in still being collated. However, initial feedback has indicated general support from the community for the preferred route and Project principles. The intent is for a more formal summary of this feedback to be available for the final submission of this IBC.

Phase 3: To date, this Project and the GCSP have aligned engagement timelines that has allowed for a single engagement plan. However, at Phase 3, the two programmes of work will have different engagement objectives. It is recommended that at the earliest stage possible in the DBC that a stakeholder engagement plan is developed and implemented. The DBC phase of the Project will focus on opportunities to 'consult' and involve' communities and stakeholders.

6 THE BASE CASE – DO MINIMUM

The Do-Minimum (base case) included a number of assumptions as outlined below and incorporated into the modelling. These are described in further detail in Appendix T – Stage 1 – Transport Modelling Technical Note.

The assumptions were largely consistent with those agreed for the PT Futures Combined Business Case. Different assumptions were only used for MRT where specifically required. External challenge sessions were organised to discuss and agree the underlying future year modelling assumptions.

Land Use Growth: The land use growth has been based on projections prepared by the Greater Christchurch Partnership as part of the GCSP work.

The GCSP evaluated three different urban form/land use scenarios to underpin the emerging urban form for Greater Christchurch. Three growth scenarios have been used to understand the implications of different ways Greater Christchurch may grow and transition over the next 30 years:

- Compact Scenario: Promotes more growth in the city and around key centres/corridors, including within the townships. It also promotes more intensification and limits greenfield growth.
- Consolidated Scenario: Provides for intensification and apportionment as per NPS-UD / Housing Capacity Assessment. It includes some greenfield areas but at higher density than current levels. It recognises the changes from the Resource Management (Enabling Housing Supply and Other matters) Amendment Act.
- Dispersed Scenario: Enables and grows the district townships, with more growth into the districts that is focused around existing townships. These densities either align with, or exceed, market demands. There is increased greenfield allocation and less intensification within the City.

The do minimum option (base case) uses the GCSP Consolidated Scenario.

Network Infrastructure: Road network infrastructure improvements included within Territorial Local Authorities (TLAs) Long Term Plans (and the Waka Kotahi National Land Transport Programme) and other identified projects likely to achieve funding, as agreed for the CTM/CAST v21 model update have been utilised. For further detail refer to Appendix T – Stage 1 – Transport Modelling Technical Note.

Public Transport Improvements: The do minimum option also incorporates the programme of currently planned PT infrastructure and service improvements as proposed in the Greater Christchurch Public Transport Combined Business Case. This programme of works is detailed further in Appendix D – Public Transport Futures Non-Technical Summary. However, some key relevant elements are outlined below:

- Increased frequency 7.5 minute peak and 10 minute off-peak on the five inner core routes:
- 5 Rolleston/New Brighton (yellow)
- 7 Halswell/Queenspark (orange)
- 3 Airport Sumner (purple)
- 1 Rangiora Cashmere (blue)
- Orbiter (green).
- Branch the core routes to the outer suburbs with 15 minute frequencies (peak and off peak) on each branch.
- Additional infrastructure improvements to provide continuous priority bus lanes on the five Inner Core routes, as identified in the PT Futured Combined Business Case.



Figure 6-1: Branching proposal for core route corridors from GC PT Combined Business Case

- Increased frequency and route modification to improve directness is also proposed on other routes.
- All day 'direct' services to and from satellite centres (Rangiora via Kaiapoi, Rolleston and Lincoln) with 15-minute peak and 30-minute off-peak frequencies (using motorways and with limited stops and vehicle HOV lanes)
- Utilisation of existing and proposed Park and Ride in the districts.

The do minimum offerings to the districts, including further detail on Park and Ride assumptions are outlined further in Section 0 of this IBC.

Parking: The cost of parking within the Central City will increase in proportion to land use development (increase in employment) within the Central City. As such, parking related costs are assumed to increase to 2051, as detailed further in Appendix T – Stage 1 – Transport Modelling Technical Note.

7 INITITAL STAGE – INTERIM REPORT

A separate Interim Report is included as Appendix G – Greater Christchurch Public Transport Futures MRT Interim Report. This report was presented to the GCPC at a meeting held on 9 July 2021, where the following resolutions were minuted:

That the Greater Christchurch Partnership Committee:

- *Receives the report and the attached MRT Interim Report.*
- *Refers the Mass Rapid Transit Interim Report to the partner Councils and Waka Kotahi Board.*
- *Notes the next steps and the proposed programme outlined in this report.*
- *Endorses the proposal to incorporate the next phase of the Mass Rapid Transit business case into the Greater Christchurch Spatial Plan work programme and request staff to bring back a plan on how we can accelerate the enhanced status quo option.*

Stage 3 of this IBC refines and retests the analysis of each of the interim scenarios and hence it is not the intention of this IBC to re-detail the analysis undertaken in this initial stage work. Background to the option development process however is summarised below as this is the entry point developed, for the option scenarios considered within this IBC. Note the Interim Report builds upon the initial point of entry point of the 2018 PBC and the subsequent 2020 PT Futures Combined Business Case.

7.1 CORRIDOR SELECTION

The Interim Report was developed prior to the GCSP work and hence considered land use data assumed in the CTM/CAST v18 model, forecast to 2028, 2038 and 2048. A range of broad MRT corridor options were considered with respect to these population forecasts and potential for travel demand to the Christchurch central city (Noting, as outlined in the strategic case, 22% of jobs are expected to be concentrated in Christchurch Central City, making this the predominate employment hub across Greater Christchurch).

A person demand of 3000 passengers in the peak hour was used as an initial viability threshold for warranting further exploration of higher capacity modes. This proxy target was compared across various corridor options. The corridor extents tested are outlined in Figure 7-1 and the resulting person demand shown in Figure 7-2.

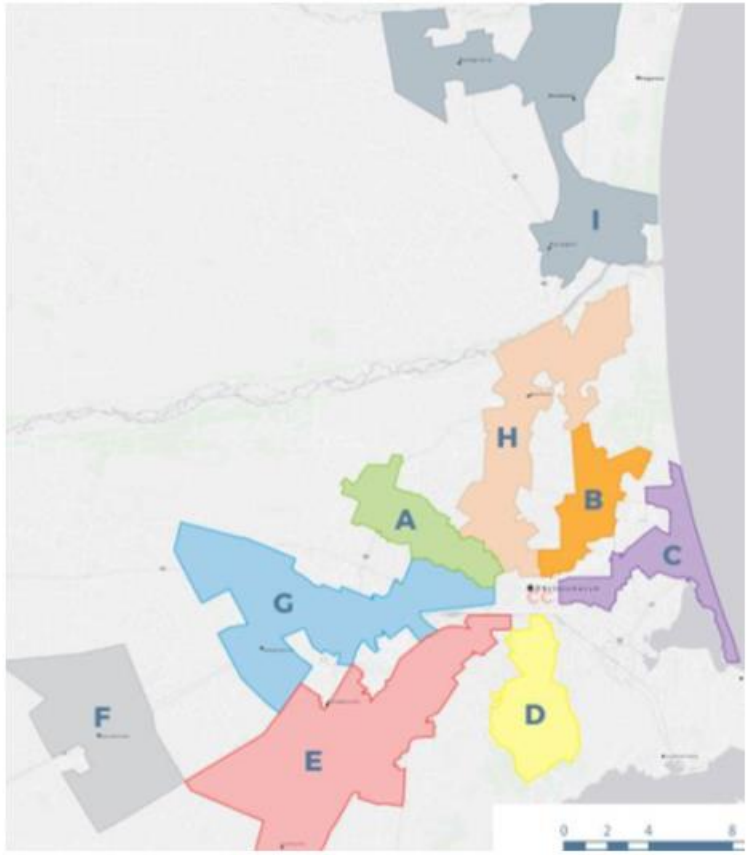


Figure 7-1: Interim Report - potential broad corridor locations



Figure 7-2: Interim Report - potential person demand by corridor

The analysis indicated that only corridors C (east), G (west) and H (north) have the potential to uplift person trips to at least 3000. Of these corridors, two of these (G-west and H-north) also provide the additional benefit of extension potential to the districts (Referred to as Larger towns in Figure 7-2.) Combining the northern corridors (HI) and south-western corridors (FG), result in the only corridors to have the potential to generate peak hourly demands of more than 3,000 people.

In summary, the northern corridor (HI) and south-western corridor (FG) were selected as the corridors to further explore MRT given:

- They accommodate a significant proportion of Greater Christchurch's growth with the population within these corridors forecast to grow from 147,000 in 2018 to 220,000 by 2048. (+50% increase). By 2048 one third of Greater Christchurch's population will live within these corridors.
- These corridors are also already well served by frequent public transport with selected bus priority and target direct services to the central city.
- The existing high demand and forecast growth show demand for travel from these corridors to the central city area to be the highest of all the corridors within the Greater Christchurch.
- They are the only corridors that generate hourly demands of more than 3,000 people per hour during the peak to the central city, an initial threshold that warrant further exploration for higher capacity modes.

It is worth noting that the identified preferred corridor, extending north and south-west, is generally consistent with the vision set out in the 2018 Programme Business Case (PBC) and Our Space 2018-2048. (Figure 7-3).

In addition, in selecting these corridors it does not preclude other corridors (e.g. to the east or south) having MRT at some point in future. If just focuses the initial investment in MRT into the corridors with the highest likelihood of success.

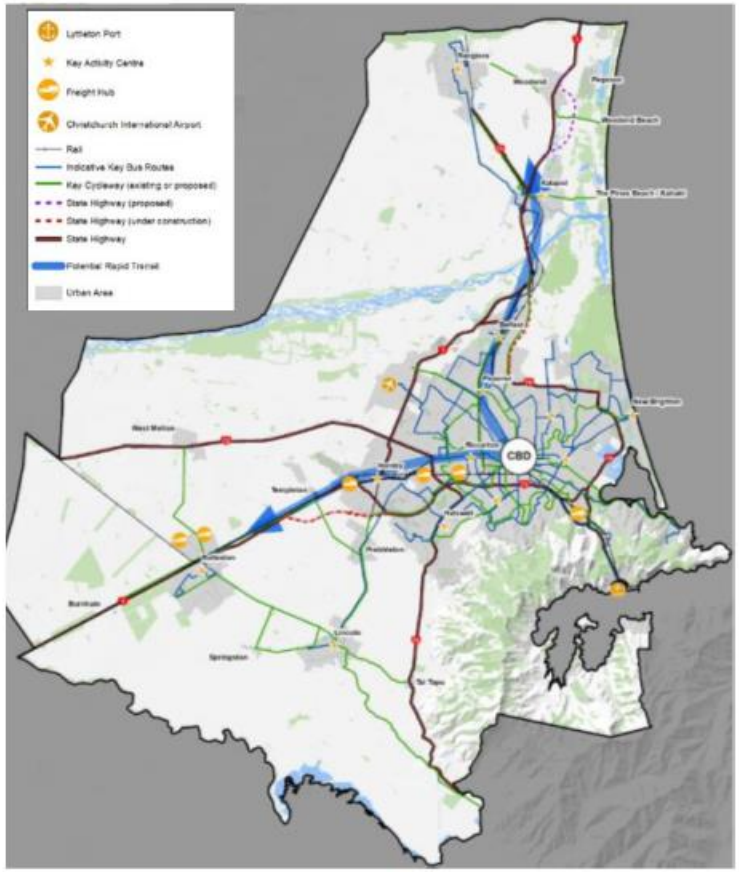


Figure 7-3: Our Space 2018 -2048 Greater Christchurch Transport Network

7.2 CORRIDOR SCENARIOS

Three rapid transit scenarios were explored within the two broad northern and south-western corridors. These scenarios were selected to test how speed, frequency and access to the rapid transit could influence urban form; improve the attractiveness of the public transport system and contribute to the city's climate change responsibilities.

The three scenarios tested in the Interim Report were:

Scenario 1: Heavy rail route: This scenario utilises and upgrades the existing heavy rail corridor and aims to reduce journey times for customers on the rapid transit system and therefore stop less often (approximately every 3.2km). It envisages through running services from Rangiora to Rolleston with a scheduled transfer from rail to a high quality connector service to link rail with central city.

Scenario 2: Street running limited stop route: This scenario follows existing roads, but with an aim to follow those parts where higher speeds can be achieved, if generally follows the motorway corridors. The scenario aims to reduce journey times for customers on the rapid transit system and stop less often (approximately every 3.2km).

Scenario 3: Street running corridor focus route: This scenario follows existing arterial routes, and aims to maximise access to the rapid transit system, passing through key activity centres and stop approximately every 1.6km through the Christchurch City section of the route.

The routes and stop locations assumed for the Interim Report are overlayed in Figure 7-4. These are further refined as part of Stages 1, 2 and 3 of the IBC process.

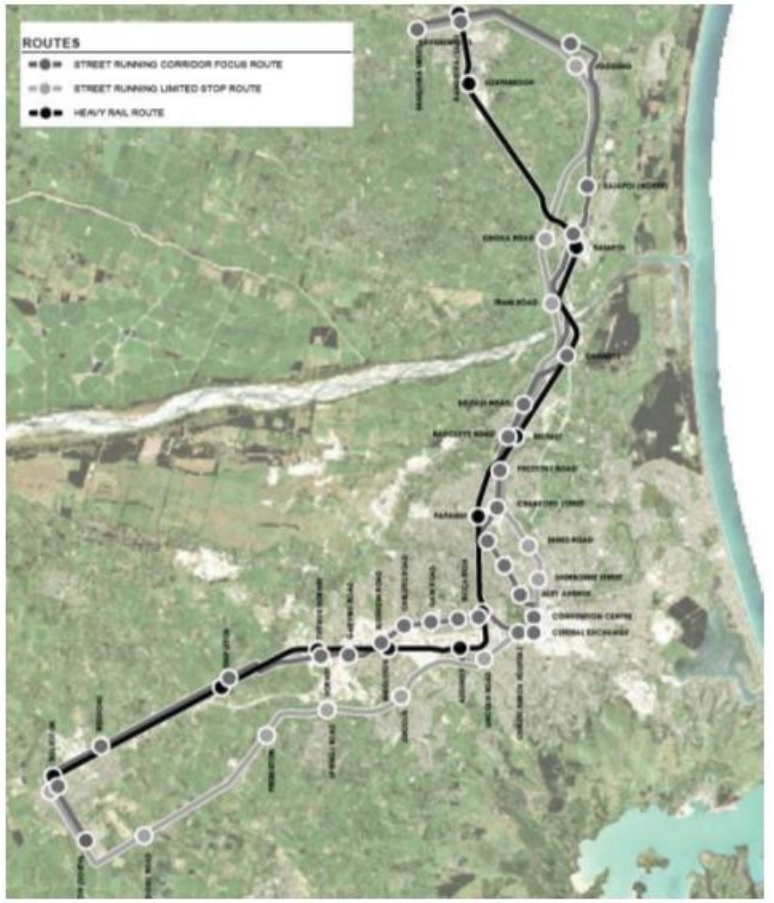


Figure 7-4: Interim Report Route Scenarios

7.3 SUMMARY OF FINDINGS

The intention of the Interim Report was to develop an understanding of the outcomes with respect to the Investment Objectives and the potential for the three corridor scenarios to provide an opportunity for growth at a scale that would support MRT.

Whilst a full MCA was not scored, the scenarios were tested against a range of selected quantitative measures relating to the Investment Objectives and drafted KPIs. These initial transport outcomes are outlined in the following table.

The results indicated that for each of the three potential routes there is an opportunity for significant growth at a scale that is supportive of MRT.

It also indicated that the street running corridor scenario (Scenario 3) would have the highest forecast use in public transport ridership, directly connecting existing Key Activity Centres (Riccarton Road and Papanui Road), as highlighted by the following table.

However, Scenario 3 also presented the most variety in terms of routing, given Scenario 1 would generally follow the existing heavy rail corridor and Scenario 2 the existing motorway corridor. Hence further investigation of the preferred route for Scenario 3 would be required to enable a fair comparison to Scenarios 1 and 2.

Furthermore, sensitivity testing showed significantly higher ridership on MRT in response to land-use assumptions. This indicated the importance of land-use within the station catchments and the need to closely align MRT work with the ongoing GSCP work to inform land use assumptions.

Table 7-1: Interim Report: Initial Transport Outcomes (Phase D results)

Investment Objective	Criteria	KPI	Outcomes		
			Heavy Rail	Street Running Limited Stops	Street Running Corridor Focused
Investment objective 1: Increased proportion of the population within key prioritised locations and along identified transport corridors within Greater Christchurch with improved access to Christchurch's Central City by 2048	Housing and employment growth	Increased number of households and jobs within 800 m of high frequency public transport	+50,000 extra residents + 33,000 jobs	+ 160,000 extra residents + 123,000 extra jobs	+280,000 extra residents +173,000 extra jobs
	Ability to support high quality integrated community	Growth impact based on land value uplift	Not calculated	Not calculated	Not calculated
	Increased access to opportunities	Population able to access the Christchurch City centre within 30 minutes using the PT system	14% (16,830) decrease from 117,740 to 100,910	47% (54,840) increase from 117,740 to 172,580	17% (19,490) increase from 117,740 to 137,230
		Change in PT mode share for trips to the Central City from Greater Christchurch	5% increase from 36% to 41%	10% increase from 36% to 46%	11% increase from 36% to 47%
		Number of jobs accessible from satellite towns within 30 minutes by PT	220% (101,100) increase from 45,900 to 147,000	148% (67,780) increase from 45,900 to 113,680	85% (38,990) increase from 45,900 to 84,890
Investment objective 2: Improved journey time and reliability of PT services relative to private vehicles within	Increased share of travel unaffected by congestion	Change in private vehicle trips along the rapid transit corridor(s) to Greater Christchurch	2% (1,358) decrease from 70,100 to 68,742	3% (3,732) decrease from 108,523 to 104,791	3% decrease from 119,375 to 115,208
		Proportion of trips made by PT along rapid transit corridor(s) to the central city	19% increase from 39% to 58%	26% increase from 31% to 57%	17% increase from 32% to 59%

Greater Christchurch by 2048;		More competitive journey times between PT and private vehicles for residents living along the corridor	CC to Rangiora (car vs RT)	26-45 min vs 35 min	26-45 min vs 53 min	26-45 min vs 1hr
			CC to Kaiapoi (car vs RT)	20-35 min vs 24 min	20-35 min vs 37 min	20-35 min vs 41 min
			CC to Hornby (car vs RT)	16-45 min vs 16 min		16-45 min vs 29 min
			CC to Rolleston (car vs RT)	22-40 min vs 29 min	22-40 min vs 42 min	22-40 min vs 43 min
	Ability to integrate efficiently and effectively with wider public transport network	Daily ridership on the rapid transit system		51,650 boardings	94,835 boardings	108,727 boardings
		Overall public transport mode share in Greater Christchurch		9%	10%	11%
Investment objective 3:Reduce emissions from transport movements across Greater Christchurch by 2048.	Impact on climate change	Change in private VKT/capita for households along the rapid transit corridor(s)		5% (833,781) decrease from 17,567,475 to 16,733,694	5% (924,314) decrease from 17,567,475 to 16,643,161	4% (737,018) decrease from 17,567,475 to 16,830,457
		Change in greenhouse gas emissions (tonnes of CO2 and HC) from transport sources along transit corridor(s)		10% (10,208) decrease from 98,101 to 87,893	15% (14,601) decrease from 98,101 to 83,500	13% (13,138) decrease from 98,101 to 84,963
		Change in greenhouse gas emissions (tonnes of CO2 and HC) from transport sources within Greater Christchurch		5% (14,056) decrease from 296,125 to 282,069	4% (12,425) decrease from 296,125 to 283,700	5% (15,582) decrease from 296,125 to 280,543
		Change in air quality and public health outcomes for households along the transit corridor(s)*		4% (4) decrease from 92 to 88	4% (4) decrease from 92 to 88	5% (5) decrease from 92 to 87

Economic Case: ○ Methodology ○ Do Minimum ● Interim Report ○ Land Use Integration ○ Long List (Stage 1) ○ Long List (Stage 2) ○ Assessments ○ Short List (Stage 3)

7.4 NEXT STEPS

The IBC tests and develops further the value proposition of **all three scenarios** as presented in the Interim report and illustrated below.

The initial focus of the IBC (Stages 1 and 2) investigates further the route options associated with Scenario 3[1], including potential route combinations with the other two Scenarios. It also refines the route, stop and mode details across all options, prior to proceeding to the short list assessment.

Scenario 1: Heavy Rail Route	**Scenario 2: Street Running (Motorway Limited Stops)**	**Scenario 3: Street Running Corridor Focused**
Rolleston – Hornby – Addington - Central City – Riccarton -Papanui – Kaiapoi – Rangiora (Approx 55km rail corridor with 17 stations)	Rolleston – Aidanfield – Addington - Central city – St Albans - Kaiapoi - Woodend - Rangiora (Approx 60km road corridor with 20 stations)	Rolleston – Hornby – Riccarton – Central City – Papanui - Kaiapoi - Woodend - Rangiora (Approx 62km road corridor with 25 stations)



Figure 7-5: Scenarios 1, 2 and 3

[1] Manawhenua have expressed fundamental opposition to the establishment of an MRT route via Kaiapoi and Woodend that would require road widening and the potential that this would involve acquisition taking of Māori Land.

8 URBAN DESIGN AND LAND USE INTEGRATION ASSESSMENT

8.1 GREATER CHRISTCHURCH SPATIAL PLAN

When this IBC was initiated, the GCSP was evaluating three different urban form/land use scenarios to inform urban form for Greater Christchurch. These were:

- **Consolidated Scenario:** Provides for intensification and apportionment as per the National Policy Statement on Urban Development (NPS-UD) / Housing Capacity Assessment. It includes some greenfield areas but at higher density than current levels. It recognises the changes from the Resource Management (Enabling Housing Supply and Other matters) Amendment Act.
- **Compact Scenario:** Promotes more growth in the city and around key centres/corridors, including within the townships. It also promotes more intensification and limits greenfield growth.
- **Dispersed Scenario:** Enables and grows the district townships, with more growth into the districts that is focused around existing townships. These densities either align with, or exceed, market demands. There is increased greenfield allocation and less intensification within the city.

The Compact urban form was applied in testing different land use scenarios.

8.2 TESTING LAND USE SCENARIOS

As part of developing this IBC, investigations were undertaken to understand both the likelihood of development occurring along the corridor and growth implications on MRT feasibility. This work sought to inform the potential land use scenario assumptions that should be used when evaluating MRT options. This work is detailed in Appendix M – Urban Design and Land Use Integration report.

In summary, three Land Use Growth Scenarios were tested within the corridor, considering the impact on MRT feasibility (in terms of likely patronage) through both anticipated growth and plan-enabled capacity (Figure 8-1).

Analysis highlighted that there is too much residential capacity within Greater Christchurch and it is an unrealistic proposition to assign all the growth to the corridor. Hence, Land Use Scenario 3 aimed to represent a tailored or staged approach which adopts a 'relative' growth strategy at key stations along the corridor through to 2051. Land Use Scenario 3 assumed the split of growth in each district (Christchurch City, Selwyn District and Waimakariri District) is retained as proposed under the compact growth scenario. However, within Christchurch City, growth was reallocated into the walkable catchments around key centres on the MRT corridor. It assumes an additional 29,000 households in the corridor by 2051, representing 50% of all CCC growth located along the corridor within walk up catchments.



Figure 8-1: Overview of Land Use Growth Scenarios

8.3 GROWTH ASSUMPTIONS FOR OPTIONS

To inform option testing in the following growth assumptions were applied:

- Do-minimum (base case) – This used the GCSP consolidated scenario.
- For the long list assessment Stage 1 (Christchurch City) and Stage 2 (District Extensions), which investigates further the arterial street running corridor (Scenario 1), the modified compact scenario (Land Use Scenario 3) was applied. This was considered appropriate since land use is expected to be further intensified, particularly around stations on the arterial corridor within the existing urban centres under MRT.
- For the short list (stage 3) assessment Land Use Scenario 3 is continued to be applied to the Scenario 3 arterial street running corridor focus option. However, for Scenario 2 motorway street running limited stop route and



Scenario 1 heavy rail route, the consolidated scenario rather than this modified compact scenario is applied. The reason being that intensification along these routes is not expected to occur to the same extent as the other options given that both are constrained to the corridor they were running along (motorway and rail). Therefore, it was considered unreasonable to expect the modified compact scenario to apply to these two options.

9 LONG LIST: ROUTE ASSESSMENT – STAGE 1

9.1 ASSESSMENT OVERVIEW

Stage 1 of the IBC focuses on the identification of a preferred route in a northern and south-western direction within Christchurch City (i.e. between Hornby and Belfast only) under the arterial street running scenario.

Stage 1 route assessment was sequentially undertaken in four sections as outlined below and illustrated in Figure 9-1:

- Section A: Central City
- Section B: Southwest corridor (Central City to Hornby)
- Section C: North corridor (Central City to Belfast)
- Section D: Airport Link

Manawhenua have reviewed the preferred MRT route (as part of the Stage 1 assessment phase) and have provided a final report setting out their position that informs the IBC (see Appendix B – Report for Mass Rapid Transit Strategic Business Case). Their position specific to each Stage 1 Section is outlined in Section A-D Preferred Option chapters of this report.

Appendix H – Stage 1 Route Assessment outlines in detail the route assessment undertaken for the street running option within Christchurch City, including the multicriteria assessment undertaken against each KPI. Scoring of the MCA was undertaken by the core consultant project team, with subject matter experts to provide input where required such as consenting, operational and constructability aspects. Key results were shared with key stakeholders at the regular MRT Stakeholder Workshops, with feedback incorporated into the final MCA as appropriate.

The following sub-sections summarises this work, outlining the options assessed and providing a high-level assessment of the option assessment against the Investment Objectives.



Figure 9-1: Stage 1 Option Development Sections A to D

9.2 STAGE 1 SECTION A OPTIONS AND ASSESSMENT

9.2.1 Section A Option Descriptions

Eleven options were considered in Section A Central City Assessment as outlined below in Figure 9-2.

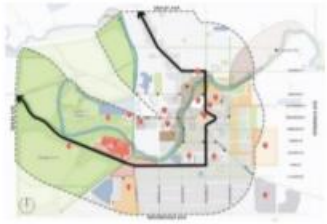
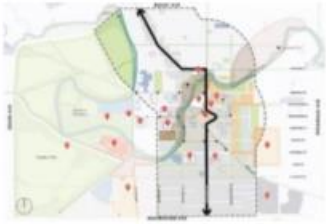
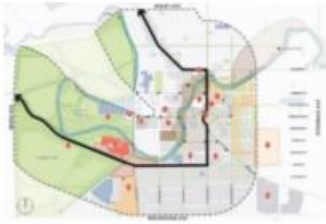
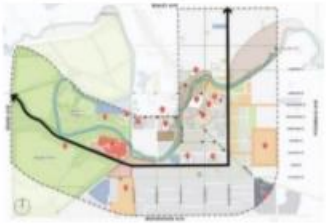
Option 1	Option 2	Option 2A	Option 3
			
Option 4	**Option 5**	**Option 5A**	**Option 5B**
			
Option 6	**Option 7**	**Option 8**	



Figure 9-2: Section A Central City Assessment Option Descriptions



9.2.2 Section A Options Assessment

MCA was undertaken across the eleven options. The results are summarised in Table 9-5, overleaf. The following paragraphs highlight option performance against the investment objectives and technical and feasibility criteria.

Investment Objective 1: *increased proportion of the population within key prioritised locations and along identified transport corridors within Greater Christchurch with improved access to Christchurch's Central City by 2051.*

Table 9-1: Section A (Central City) MCA scores for Investment Objective 1

KPI	City Centre Option										
	1	2	2A	3	4	5	5A	5B	6	7	8
KPI 1: *Change in accessibility to and from the Central City* **KPI 2:** *Change in access to opportunities from prioritised locations* **KPI 3:** *Change in development potential*	1	1	1	1	1	2	2	2	2	1	2

Although all options scored positively, Options 5, 5A, 5B, 6 and 8 scored the highest. This reflected the good connectivity these routes have to residential and employment opportunities, along with their ability to contribute to high quality public realm outcomes.

Investment Objective 2: *improved journey time and reliability of PT services relative to private vehicles within Greater Christchurch by 2051.*

Table 9-2: Section A (Central City) MCA scores for Investment Objective 2

KPI	City Centre Option										
	1	2	2A	3	4	5	5A	5B	6	7	8
KPI 2: *Change in access to opportunities from prioritised locations* **KPI 5:** *Change in journey times and reliability by public transport and private vehicles* **KPI 6:** *Ability to integrate efficiently and effectively with wider public transport*	1	1	1	1	1	2	2	1	1	1	1

All options also scored positively. However, Options 5 and 5A scored the highest, mainly due to these options being the most direct (including having the lowest number of right hand turns that would conflict with oncoming traffic or pedestrian flows (Option 1A)), serving key city centre destinations, and being well integrated with the existing and future public transport network and its associated facilities.

Investment Objective 3: *reduce emissions from transport movements across Greater Christchurch by 2051.*

Table 9-3: Section A (Central City) MCA scores for Investment Objective 3

KPI	City Centre Option										
	1	2	2A	3	4	5	5A	5B	6	7	8
KPI 7: *Change in emissions from transport and improved environmental outcomes*	1	1	1	1	1	1	1	1	1	1	1

For investment objective 3, there was no discernible variation in performance and scoring across any of the eleven options considered.

Technical and feasibility criteria:

Table 9-4: Section A (Central City) MCA scores for technical and feasibility criteria

Description	City Centre Option										
	1	2	2A	3	4	5	5A	5B	6	7	8
Technical and feasibility criteria	-1.4	-0.8	-0.8	-1.2	-1.0	-0.6	-0.6	-1.0	-0.6	-1.2	-1.4

From a technical and feasibility perspective, Options 5, 5A and 6 scored the highest. Generally, this was because they were considered to achieve better integration with the wider transport network, having less consentability and environmental risks, and having more positive social and community impacts.

Summary

Overall, two options emerged as the preferred route options within the city centre (Option 5 and Option 5A). Both utilised the Tuam and Manchester Street corridors, with a variant to deviate from Manchester on Kilmore and Victoria Streets as opposed to exiting the Central City to Bealey Avenue via Manchester Street.

Following the stakeholder workshop held on the 15 July 2022, it was confirmed that the preferred route was Option 5 which exits the Central City via Kilmore and Victoria Streets given this would connect better with central city destinations including the Town Hall, north Hagley Park and the retail and commercial area of Victoria Street.

Economic Case: ○ Methodology ○ Do Minimum ○ Interim Report ○ Land Use Integration ● Long List (Stage 1) ○ Long List (Stage 2) ○ Assessments ○ Short List (Stage 3)

Table 9-5: Summary of Section A - Central City MCA

PT Futures Mass Rapid Transit IBC MCA (Long List - Stage 1: Street Running Corridor Route Assessment - Central City)				Do minimum	Central City Options										
					1	2	2a	3	4	5	5a	5b	6	7	8
Benefit	**Investment Objective**	**KPI**	**Measure**	**Score**	**Score**										
Greater public transport capacity along the transit corridor that can accommodate growth and support high density development around key nodes (33%)	**1. Increased proportion of the population within key prioritised locations and along identified transport corridors within Greater Christchurch with improved access to Christchurch's Central City by 2051 (33%)**	Change in accessibility to and from the Central City	Total households per kilometre along the route corridor within 500m	0	1	1	3	1	1	2	2	1	1	1	2
			Total existing employment numbers within 500m of the corridor	0	2	2	1	2	2	3	2	3	2	2	2
		Change in access to opportunities from prioritised locations	Household growth (2021-2051) within 500m of the corridor	0	2	2	2	2	2	3	2	3	1	2	2
			Increase in the number of jobs within 500m of the corridor	0	3	3	1	3	3	3	3	3	2	3	3
		Change in development potential	Enables high quality public realm outcomes	0	-3	-1	-1	-3	-2	2	2	2	2	1	1
			Available total feasible capacity of land development within 500m of the corridor.	0	1	1	1	1	1	1	1	1	1	1	1
			Capitalisation Ratio – likelihood of development within 500m of the corridor.	0	2	2	2	2	2	2	2	2	2	2	2
			Contribution and alignment with strategic policy objectives in relation to land use integration, public realm and urban design.	0	1	1	1	-1	-1	2	1	1	1	-1	-1
Improved access to jobs, education and social opportunities (33%)	**2. Improved journey time and reliability of PT services relative to private vehicles within Greater Christchurch by 2051 (33%)**	Change in access to opportunities from prioritised locations	Number of key destinations and strategic land uses within 500m walk up catchment.	0	2	2	1	2	2	3	2	2	1	2	2
			Change in accessibility to comprehensive development sites within 500m walk up of the corridor.	0	2	2	2	2	2	2	2	2	1	2	2
		Shift in trips to public transport and active modes	*No MCA measure – this required modelling outputs which were not undertaken at this stage of the assessment across all the options. This KPI was assessed as part of the short list assessment.*												
		Change in journey times and reliability by PT and private vehicles	Directness of the MRT route relative to the most likely car route (qualitative)	0	1	1	2	1	1	1	2	1	2	1	1
			Number of right turns conflicting with oncoming traffic or pedestrian flows (at grade)	0	-2	-2	-1	-2	-2	-2	-1	-3	-1	-3	-3
		Ability to integrate efficiently and effectively with wider public transport	Extent of integration with strategic PT routes /facilities	0	2	2	1	2	2	3	3	3	1	2	2
			Extent of integration with strategic active mode facilities.	0	-2	-1	-1	-1	-2	0	0	0	0	-1	-1
Transition from single occupancy car use to lower-carbon transport options, reducing emissions (33%)	**3. Reduce emissions from transport movements across Greater Christchurch by 2051 (33%)**	Change in emissions from transport movements and improved environmental outcomes	Number of destinations and opportunities along the corridor that would encourage mode shift.	0	1	1	1	1	1	1	1	1	1	1	1

Technical/Feasibility Assessment		Score	Score										
Costs	Costs of the option (Capex, Property and Opex)	0	*No route MCA measure – was assessed as part of the mode considerations and short list assessment*										
Constructability	Assessment of constructability / complexity of the option	0	-2	-2	-1	-2	-2	-2	-2	-3	-2	-2	-2
Operational Implications	Assessment of how well the option will integrate with the wider transport network	0	-2	-2	-2	-2	-2	-2	-1	-2	-1	-2	-2
Property Requirements	Scale and magnitude of the property impact along the corridor	0	-1	0	0	0	0	0	0	0	0	-2	-1
Consenting and Environmental Impacts	Assessment of the level of consenting complexity/difficulty and the likelihood of obtaining approvals for the proposal and qualitative assessment of key environmental risks	0	-3	-2	-2	-3	-2	-1	-1	-1	-1	-1	-3
Social and Community Impacts	Assessment of the impact on community access and cohesion including consideration of the number of sensitive receivers (schools / hospitals / day cares / etc.)	0	1	2	1	1	1	2	1	1	1	1	1
Overall score (weighted)		0	-0.5	-0.1	-0.1	-0.4	-0.3	0.3	0.3	-0.1	0.1	-0.4	-0.4

Economic Case: Methodology | Do Minimum | Interim Report | Land Use Integration | Long List (Stage 1) | Long List (Stage 2) | Assessments | Short List (Stage 3)

9.2.3 Section A Preferred Option

Central City Option 5 is the preferred route in Section A. The route is approximately 4.7km in length, entering the city through Victoria Street and Riccarton Ave, and travels along Tuam Street, Manchester Street and Kilmore Street. The route is presented below along with its key pros and cons in Figure 9-3.

The Mahaanui Kurataiao (March 2023) report (see Appendix B – Report for Mass Rapid Transit Strategic Business Case) sets out that the Option 5 route can be supported on the basis that it avoids disruption to known wāhi tapu and wāhi taonga, provides an efficient circulation route around the perimeter of the Central City (noting further work is required to consider the best way to access the Bus Exchange) and provides for accessibility to the Hospital.



PROS

- Good accessibility to all key city centre destinations, including the Canterbury Multi-Use Arena, Ara Campus, East Frame residential area and future mixed use developments to the east.
- Using Manchester Streets, leaves Colombo Street to become pedestrian orientated.
- Manchester Street is an exiting public transport corridor. MRT here would closely align with identified function for this corridor.
- Provides transfer legibility at both the Manchester and Hospital 'Super Stops' and the Bus Exchange.
- PT only opportunity exists along Manchester and Tuam Streets.

CONS

- Potential space constraints given Victoria and Tuam Streets include strategic cycle routes.
- Potential space constraints with existing Manchester Street bus routes, given the existing bus priority space allocation along Manchester Street.
- Route is less accessible to destinations on the western extent of the city centre.

LEGEND

- Potential MRT Route
- 500m Walkable Catchment
- Existing & Proposed Cycleways
- Street Upgrades
- Existing Tourist Tram Route
- Existing Tourist Tram Stops
- Schools
- Christchurch Hospital
- Hospital Precinct
- Civic Buildings
- Ngāi Tahu Owned Land
- Wahi Tapu/Wahi Taonga
- Ngā Tūranga Tūpuna
- Vacant Lots
- New Developments/Development Opportunities
- Open Space

KEY CENTRAL CITY DESTINATIONS

1 Cathedral Square
2 Te Pae Convention Centre
3 Tūranga
4 Performing Arts Precinct
5 Christchurch Town Hall
6 Christchurch Art Gallery
7 Christchurch City Council Office
8 The Arts Centre
9 Canterbury Museum
10 Botanic Gardens
11 Christchurch Hospital
12 Hagley Oval
13 Parakiore Recreation Centre
14 Justice Precinct
15 Bus Exchange
16 Ara Institute of Canterbury
17 Canterbury Multi-Use Arena

Figure 9-3: Central City Option 5 Location, Key Destinations and Identified Pros and Cons

Economic Case: ○ Methodology ○ Do Minimum ○ Interim Report ○ Land Use Integration ● Long List (Stage 1) ○ Long List (Stage 2) ○ Assessments ○ Short List (Stage 3)

9.3 STAGE 1 SECTION B OPTIONS AND ASSESSMENT

9.3.1 Section B Option Descriptions

Eight options we considered In Section B South West Assessment as outlined below in Figure 9-4.



Figure 9-4: Section B Assessment Option descriptions



9.3.2 Section B Options Assessment

MCA was undertaken across the eight options, the results of which are outlined in Table 9-10. The following paragraphs highlight option performance against the investment objectives and technical and feasibility criteria.

Investment Objective 1: *increased proportion of the population within key prioritised locations and along identified transport corridors within Greater Christchurch with improved access to Christchurch's Central City by 2051.*

Table 9-6: Section B (South West Corridor) MCA scores for Investment Objective 1

KPI	Southwest Corridor Option							
	1	2	3	3a	4	5	6	6a
KPI 1: *Change in accessibility to and from the Central City* **KPI 2:** *Change in access to opportunities from prioritised locations* **KPI 3:** *Change in development potential*	1	1	2	2	2	2	2	2

Options 3-6a all scored the highest. These routes generally had the highest numbers of household and employment growth within 500m of the proposed corridor, provided access to the greater feasible land development capacity and enabled high quality public realm options. The remaining two options scored the same given their similar alignments.

Investment Objective 2: *improved journey time and reliability of PT services relative to private vehicles within Greater Christchurch by 2051.*

Table 9-7: Section B (South West Corridor) MCA scores for Investment Objective 2

KPI	Southwest Corridor Option							
	1	2	3	3a	4	5	6	6a
KPI 2: *Change in access to opportunities from prioritised locations* **KPI 5:** *Change in journey times and reliability by public transport and private vehicles* **KPI 6:** *Ability to integrate efficiently and effectively with wider public transport*	1	1	1	1	2	1	1	1

Option 4 scored the highest primarily given it is well aligned with the three centres (Hornby, Church Corner and Riccarton) and strategic land uses along the corridor. In addition, it services a greater number of clusters of Kainga Ora land, and is a direct route between its origin and destination. All other options scored the same.

Investment Objective 3: *reduce emissions from transport movements across Greater Christchurch by 2051.*

Table 9-8: Section B (South West Corridor) MCA scores for Investment Objective 3

KPI	Southwest Corridor Option							
	1	2	3	3a	4	5	6	6a
KPI 7: *Change in emissions from transport and improved environmental outcomes*	0	0	1	2	2	2	2	2

Options 3a to 6a scored the highest, on the basis that they were better connected to key destinations that would encourage mode shift and hence emission reductions.

Technical and feasibility criteria:

Table 9-9: Section B (South West Corridor) MCA scores for technical and feasibility criteria

Description	Southwest Corridor Option							
	1	2	3	3a	4	5	6	6a
Technical and feasibility criteria	-1.0	-1.0	-1.2	-1.0	-1.0	-1.0	-1.2	-1.4

From a technical and feasibility perspective, there was limited variation in the scoring, except for Option 6A which was notably lower than the other options, reflecting the greater consenting complexity, private property acquisition required and the operational and construction impacts.

Summary

Overall, Option 4 was identified as the preferred option for the South West Corridor, which uses Main South Road and Riccarton Road corridor.

Economic Case: ○ Methodology ○ Do Minimum ○ Interim Report ○ Land Use Integration ● Long List (Stage 1) ○ Long List (Stage 2) ○ Assessments ○ Short List (Stage 3)

Table 9-10: Summary of Section B – South Western Corridor MCA

PT Futures Mass Rapid Transit IBC MCA (Long List - Stage 1: Street Running Corridor Route Assessment - South Western Corridor)				Do minimum	South West Corridor Options							
					1	2	3	3a	4	5	6	6a
Benefit	**Investment Objective**	**KPI**	**Measure**	**Score**	**Score**							
Greater public transport capacity along the transit corridor that can accommodate growth and support high density development around key nodes (33%)	**1. Increased proportion of the population within key prioritised locations and along identified transport corridors within Greater Christchurch with improved access to Christchurch's Central City by 2051 (33%)**	Change in accessibility to and from the Central City	Total households per kilometre along the route corridor within 500m	0	1	1	2	2	3	2	3	3
			Total existing employment numbers within 500m of the corridor	0	3	3	2	2	1	2	1	1
		Change in access to opportunities from prioritised locations	Household growth (2021-2051) within 500m of the corridor	0	1	1	2	2	2	2	3	3
			Increase in the number of jobs within 500m of the corridor	0	1	1	1	2	2	2	1	1
		Change in development potential	Enables high quality public realm outcomes	0	1	1	2	2	3	2	1	2
			Available total feasible capacity of land development within 500m of the corridor.	0	1	1	2	2	2	2	2	2
			Capitalisation Ratio – likelihood of development within 500m of the corridor.	0	1	1	1	1	1	1	1	1
			Contribution and alignment with strategic policy objectives in relation to land use integration, public realm and urban design.	0	1	1	2	2	2	2	1	2
Improved access to jobs, education and social opportunities (33%)	**2. Improved journey time and reliability of PT services relative to private vehicles within Greater Christchurch by 2051 (33%)**	Change in access to opportunities from prioritised locations	Number of key destinations and strategic land uses within 500m walk up catchment.	0	1	1	2	2	3	3	3	3
			Change in accessibility to comprehensive development sites within 500m walk up of the corridor.	0	1	1	2	3	3	2	2	1
		Shift in trips to public transport and active modes	*No MCA measure – this required modelling outputs which were not undertaken at this stage of the assessment across all the options. This KPI was assessed as part of the short list assessment.*									
		Change in journey times and reliability by PT and private vehicles	Directness of the MRT route relative to the most likely car route (qualitative)	0	3	3	1	1	3	2	0	0
			Number of right turns conflicting with oncoming traffic or pedestrian flows (at grade)	0	-1	-1	-2	-2	-1	-2	-1	-1
		Ability to integrate efficiently and effectively with wider public transport	Extent of integration with strategic PT routes /facilities	0	0	0	1	2	3	2	0	0
			Extent of integration with strategic active mode facilities.	0	3	3	3	2	1	1	2	3
Transition from single occupancy car use to lower-carbon transport options, reducing emissions (33%)	**3. Reduce emissions from transport movements across Greater Christchurch by 2051 (33%)**	Change in emissions from transport movements and improved environmental outcomes	Number of destinations and opportunities along the corridor that would encourage mode shift.	0	0	0	1	2	2	2	2	2

Technical/Feasibility Assessment		Score	Score							
Costs	Costs of the option (Capex, Property and Opex)	*No route MCA measure – was assessed as part of the mode considerations and short list assessment*								
Constructability	Assessment of constructability / complexity of the option	0	-1	-1	-2	-2	-2	-2	-2	-2
Operational Implications	Assessment of how well the option will integrate with the wider transport network	0	-1	-1	-2	-2	-2	-2	-2	-2
Property Requirements	Scale and magnitude of the property impact along the corridor	0	0	0	-1	-1	-1	-1	-1	-2
Consenting and Environmental Impacts	Assessment of the level of consenting complexity/difficulty and the likelihood of obtaining approvals for the proposal and qualitative assessment of key environmental risks	0	-2	-2	-2	-2	-2	-2	-2	-3
Social and Community Impacts	Assessment of the impact on community access and cohesion including consideration of the number of sensitive receivers (schools / hospitals / day cares / etc.)	0	-1	-1	1	2	2	2	1	2
Overall score (weighted)		0	-0.4	-0.4	-0.3	0.0	0.1	0.0	-0.1	-0.3

9.3.3 Section B Preferred Option

South West Option 4 is the preferred route in Section B. The route is approximately 7.5km in length, connecting Hornby with the city centre via Riccarton Road and Main South Road. It enters the city centre from the south from Riccarton Road. The route is presented below along with its key pros and cons in Figure 9-5.

The Mahaanui Kurataiao (March 2023) report (see Appendix B – Report for Mass Rapid Transit Strategic Business Case) sets out that Option 4 using Main South Road and Riccarton Road at a strategic level can be supported noting that the station location at Hornby requires further development.



PROS

- The route aligns with the Riccarton and Hornby emerging metropolitan centres, Church Corner town centre and a number of schools and libraries.
- Shortest length to connect Hornby and Riccarton Centres within one route.
- Opportunity for a portion of Riccarton Road aligning with the centre to become a Transit Mall promoting mode-shift.
- The route enables a multi-modal transfer/ connection to the university.
- Established mixed land use along the corridor with a high portion of residential area within the catchment.
- Some light industrial areas provide opportunities for large scale, mixed-use transit orientated development.
- Light industrial areas along the route might provide opportunity for a depot.
- The route aligns with several pockets of Kāinga Ora ownership unlocking potential for accessible comprehensive redevelopment.
- The Riccarton Road section passes through an area with high redevelopment feasibility and potential for higher intensification
- Already a high use bus corridor with a significant section of bus lane along the route.
- Existing bridge structure along Bienheim Road that can be used to cross the railway.
- Route alignment has the simplest geometry.

CONS

- Potential operational complexity given MRT and Orbiter bus route overlap on Riccarton Road.
- Main South/Shands Road is a rail level crossing and might require grade separation.
- Riccarton Road crosses the railway at grade so might require a grade separation.

LEGEND

- Potential MRT Route
- 500m Walkable Catchment
- Key Activity Centres
- Town Centres
- Local Centres
- Railway
- Airport Noise Contour
- Kāinga Ora Owned Land
- CCC Owned Housing
- Ngāi Tahu Owned Land
- Ngā Tūranga Tūpuna
- Schools
- Universities/Tertiary Institutes
- Open Space
- Core Bus Routes
- Cycleways

BOFFA MISKELL | CHRISTCHURCH MASS RAPID TRANSIT - ROUTE OPTIONS LONG LIST | SOUTH-WESTERN 04
33

Figure 9-5 South West Corridor Option 4 Location, Key Destinations and Identified Pros and Cons

9.4 STAGE 1 SECTION C OPTIONS AND ASSESSMENT

9.4.1 Section C Option Descriptions

Two options we considered In Section C Northern corridor assessment as outlined below in Figure 9-6.



Figure 9-6: Section C Assessment Option Descriptions



9.4.2 Section C Options Assessment

MCA was undertaken across the two options, the results of which are outlined in Table 9-15. The following paragraphs highlight option performance against the investment objectives and technical and feasibility criteria.

Investment Objective 1: *increased proportion of the population within key prioritised locations and along identified transport corridors within Greater Christchurch with improved access to Christchurch's Central City by 2051.*

Table 9-11: Section C (Northern Corridor) MCA scores - Investment Objective 1

KPI	North Corridor Option	
	1	2
KPI 1: *Change in accessibility to and from the Central City* **KPI 2:** *Change in access to opportunities from prioritised locations* **KPI 3:** *Change in development potential*	2	1

Option 1 scored the highest, reflecting that this option accesses more households and employment opportunities within 500m of the corridor and aligns the best with strategic policy objectives, including key centres.

Investment Objective 2: *improved journey time and reliability of PT services relative to private vehicles within Greater Christchurch by 2051.*

Table 9-12: Section C (Northern Corridor) MCA scores - Investment Objective 2

KPI	North Corridor Option	
	1	2
KPI 2: *Change in access to opportunities from prioritised locations* **KPI 5:** *Change in journey times and reliability by public transport and private vehicles* **KPI 6:** *Ability to integrate efficiently and effectively with wider public transport*	3	2

Option 1 also scored higher than Option 2 for Investment Objective 2, a result of the greater number of destinations that this corridor would provide access to and the alignment with three Kainga Ora land clusters.

Investment Objective 3: *reduce emissions from transport movements across Greater Christchurch by 2051*

Table 9-13: Section C (Northern Corridor) MCA scores - Investment Objective 3

KPI	North Corridor Option	
	1	2
KPI 7: *Change in emissions from transport and improved environmental outcomes*	2	1

Again, Option 1 scored higher than Option 2 given it has the higher number of opportunities and destinations to encourage mode shift.

Technical and feasibility criteria:

Table 9-14: Section C (Northern Corridor) MCA scores – technical and feasibility criteria

Description	North Corridor Option	
	1	2
Technical and feasibility criteria	-0.8	-1.0

Overall, from a technical and feasibility perspective, there was limited variation in the scoring, but again Option 1 scored better than Option 2. While the construction of Option 1 is anticipated to be more challenging (a reflection of the multiple sensitive receivers along the route and the complex construction site associated with the Papanui centre / Northlands Mall), from a consentability and environmental perspective this route avoids the Cranford Street designation and results in greater community access and cohesion.

Summary

Overall, Option 1 emerged as the preferred option and utilises Papanui Road and Main North Road. This aligns best with the central city option that utilises Victoria Street and therefore informs final route section within the city centre. Refer to for a summary of the MCA for Section A – Northern Corridor.

Economic Case: Methodology | Do Minimum | Interim Report | Land Use Integration | Long List (Stage 1) | Long List (Stage 2) | Assessments | Short List (Stage 3)

Table 9-15: Summary of Section C - Northern Corridor MCA

PT Futures Mass Rapid Transit IBC MCA (Long List - Stage 1: Street Running Corridor Route Assessment - Northern Corridor)				Do minimum	Northern Corridor Options	
					1	2
Benefit	**Investment Objective**	**KPI**	**Measure**	**Score**	**Score**	
Greater public transport capacity along the transit corridor that can accommodate growth and support high density development around key nodes (33%)	**1. Increased proportion of the population within key prioritised locations and along identified transport corridors within Greater Christchurch with improved access to Christchurch's Central City by 2051 (33%)**	Change in accessibility to and from the Central City	Total households per kilometre along the route corridor within 500m	0	3	3
			Total existing employment numbers within 500m of the corridor	0	2	1
		Change in access to opportunities from prioritised locations	Household growth (2021-2051) within 500m of the corridor	0	2	1
			Increase in the number of jobs within 500m of the corridor	0	2	1
		Change in development potential	Enables high quality public realm outcomes	0	2	1
			Available total feasible capacity of land development within 500m of the corridor.	0	2	1
			Capitalisation Ratio – likelihood of development within 500m of the corridor.	0	1	1
			Contribution and alignment with strategic policy objectives in relation to land use integration, public realm and urban design.	0	3	1
Improved access to jobs, education and social opportunities (33%)	**2. Improved journey time and reliability of PT services relative to private vehicles within Greater Christchurch by 2051 (33%)**	Change in access to opportunities from prioritised locations	Number of key destinations and strategic land uses within 500m walk up catchment.	0	3	1
			Change in accessibility to comprehensive development sites within 500m walk up of the corridor.	0	1	1
		Shift in trips to public transport and active modes	*No MCA measure – this required modelling outputs which were not undertaken at this stage of the assessment across all the options. This KPI was assessed as part of the short list assessment.*			
		Change in journey times and reliability by PT and private vehicles	Directness of the MRT route relative to the most likely car route (qualitative)	0	3	3
			Number of right turns conflicting with oncoming traffic or pedestrian flows (at grade)	0	3	2
		Ability to integrate efficiently and effectively with wider public transport	Extent of integration with strategic PT routes /facilities	0	3	3
			Extent of integration with strategic active mode facilities.	0	2	2
Transition from single occupancy car use to lower-carbon transport options, reducing emissions (33%)	**3. Reduce emissions from transport movements across Greater Christchurch by 2051 (33%)**	Change in emissions from transport movements and improved environmental outcomes	Number of destinations and opportunities along the corridor that would encourage mode shift.	0	2	1

Technical/Feasibility Assessment		Score	Score	
Costs	Costs of the option (Capex, Property and Opex)	*No route MCA measure – was assessed as part of the mode considerations and short list assessment*		
Constructability	Assessment of constructability / complexity of the option	0	-2	-1
Operational Implications	Assessment of how well the option will integrate with the wider transport network	0	-2	-2
Property Requirements	Scale and magnitude of the property impact along the corridor	0	-1	-1
Consenting and Environmental Impacts	Assessment of the level of consenting complexity/difficulty and the likelihood of obtaining approvals for the proposal and qualitative assessment of key environmental risks	0	-1	-2
Social and Community Impacts	Assessment of the impact on community access and cohesion including consideration of the number of sensitive receivers (schools / hospitals / day cares / etc.)	0	2	1
Overall score (weighted)		0	**0.4**	**-0.1**

Economic Case: Methodology | Do Minimum | Interim Report | Land Use Integration | Long List (Stage 1) | Long List (Stage 2) | Assessments | Short List (Stage 3)

9.4.3 Section C Preferred Option

Northern Option 1 is the preferred route in Section C. The route is approximately 9.4km in length, connecting Belfast / Northwood with the city centre via the Papanui Road and Main North Road corridor. It enters the city centre from via Victoria Street. The route is presented below along with its key pros and cons in Figure 9-7.

The Mahaanui Kurataiao (March 2023) report (refer to Appendix B – Report for Mass Rapid Transit Strategic Business Case) sets out that Option 1 using Papanui Road and Main South Road can be supported at a strategic level.



Figure 9-7. Northern Corridor Option 1 Location, Key Destinations and Identified Pros and Cons

9.5 STAGE 1 SECTION D OPTIONS AND ASSESSMENT

9.5.1 Section D Option Descriptions

Eight options we considered In Section D Airport Link assessment (Figure 9-8).

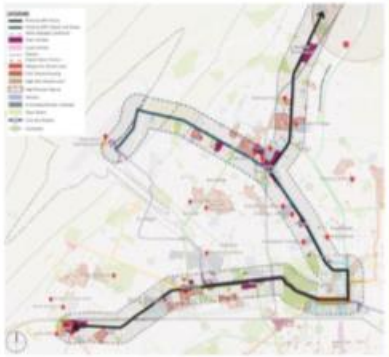
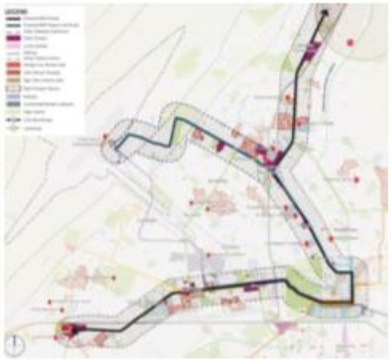
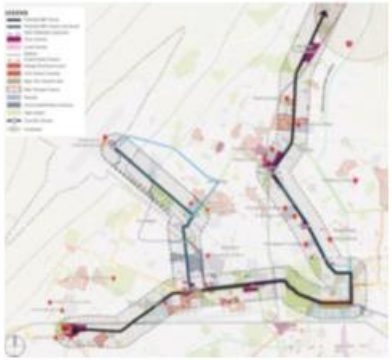
Option 1	Option 2	Option 3	Option 4
			
Option 5	**Option 6**	**Option 7**	**Option 8**



Figure 9-8: Section D Assessment Option Descriptions



9.5.2 Section D Options Assessment

MCA was undertaken across the eight options, the results of which are outlined in Table 9-20. The following paragraphs highlight the options performance against the investment objectives and technical and feasibility criteria.

Investment Objective 1: increased proportion of the population within key prioritised locations and along identified transport corridors within Greater Christchurch with improved access to Christchurch's Central City by 2051.

Table 9-16: Section D (Airport Link) MCA scores - Investment Objective 1

KPI	Airport Link Option							
	1	2	3	4	5	6	7	8
KPI 1: *Change in accessibility to and from the Central City* **KPI 2:** *Change in access to opportunities from prioritised locations* **KPI 3:** *Change in development potential*	1	2	2	2	2	2	2	1

For investment objective 1, Options 1 and 8 were scored lower on the basis that they do not connect to as many households and or employment numbers along the corridor. There was no discernible difference between the remaining options.

Investment Objective 2: improved journey time and reliability of PT services relative to private vehicles within Greater Christchurch by 2051.

Table 9-17: Section D (Airport Link) MCA scores - Investment Objective 2

KPI	Airport Link Option							
	1	2	3	4	5	6	7	8
KPI 2: *Change in access to opportunities from prioritised locations* **KPI 5:** *Change in journey times and reliability by public transport and private vehicles* **KPI 6:** *Ability to integrate efficiently and effectively with wider public transport*	0	0	1	1	1	1	1	0

For investment objective 2, Option 1, 2 and 8 scored the lowest. These were all the least direct routes, and also had the highest numbers of right turns across oncoming traffic. The remaining five options all performed similarly.

Investment Objective 3: *reduce emissions from transport movements across Greater Christchurch by 2051.*

Table 9-18: Section D (Airport Link Corridor) MCA scores - Investment Objective 3

KPI	Airport Link Option							
	1	2	3	4	5	6	7	8
KPI 7: *Change in emissions from transport and improved environmental outcomes*	1	2	1	2	2	1	2	1

For investment objective 3, Options 2, 4, 5 and 7 all had the highest potential for encouraging mode shift so scored the highest. The remaining options had lower potential for mode shift as they did not connect to as many key destinations.

Technical and feasibility criteria:

Table 9-19: Section D (Airport Link) MCA scores – technical and feasibility criteria

Description	Airport Link Option							
	1	2	3	4	5	6	7	8
Technical and feasibility criteria	-1.0	-1.0	-1.0	-1.2	-1.2	-1.2	-0.8	-1.4

All options scored similarly against the technical and feasibility criteria, with the exception of Option 7 and 8. Option 7 scored the highest as it provides the most opportunity to improve community access and cohesion (e.g. through Bishopdale town centre and the University). Option 8 scored the worst due to limitations on connections to community and social services, and lower accessibility to employment.

Economic Case: ○ Methodology ○ Do Minimum ○ Interim Report ○ Land Use Integration ● Long List (Stage 1) ○ Long List (Stage 2) ○ Assessments ○ Short List (Stage 3)

Table 9-20: Summary of Section D – Airport MCA

PT Futures Mass Rapid Transit IBC MCA (Long List - Stage 1: Street Running Corridor Route Assessment - Airport Link Corridor)				Do minimum	Airport Link Corridor Options							
					1	2	3	4	5	6	7	8
Benefit	**Investment Objective**	**KPI**	**Measure**	**Score**	**Score**							
Greater public transport capacity along the transit corridor that can accommodate growth and support high density development around key nodes (33%)	**1. Increased proportion of the population within key prioritised locations and along identified transport corridors within Greater Christchurch with improved access to Christchurch's Central City by 2051 (33%)**	Change in accessibility to and from the Central City	Total households per kilometre along the route corridor within 500m	0	2	2	3	2	2	2	2	2
			Total existing employment numbers within 500m of the corridor	0	1	2	1	2	1	1	3	0
		Change in access to opportunities from prioritised locations	Household growth (2021-2051) within 500m of the corridor	0	2	2	1	1	1	2	3	1
			Increase in the number of jobs within 500m of the corridor	0	1	2	3	3	2	2	3	1
		Change in development potential	Enables high quality public realm outcomes	0	1	1	1	2	1	1	1	1
			Available total feasible capacity of land development within 500m of the corridor.	0	1	1	0	0	2	1	2	0
			Capitalisation Ratio – likelihood of development within 500m of the corridor.	0	1	1	2	2	2	2	2	2
			Contribution and alignment with strategic policy objectives in relation to land use integration, public realm and urban design.	0	2	2	2	2	1	2	2	1
Improved access to jobs, education and social opportunities (33%)	**2. Improved journey time and reliability of PT services relative to private vehicles within Greater Christchurch by 2051 (33%)**	Change in access to opportunities from prioritised locations	Number of key destinations and strategic land uses within 500m walk up catchment.	0	1	1	2	2	2	1	2	1
			Change in accessibility to comprehensive development sites within 500m walk up of the corridor.	0	2	2	0	0	0	0	1	0
		Shift in trips to public transport and active modes	*No MCA measure – this required modelling outputs which were not undertaken at this stage of the assessment across all the options. This KPI was assessed as part of the short list assessment.*									
		Change in journey times and reliability by PT and private vehicles	Directness of the MRT route relative to the most likely car route (qualitative)	0	1	1	1	1	2	3	0	0
			Number of right turns conflicting with oncoming traffic or pedestrian flows (at grade)	0	-2	-3	-1	-1	-1	-1	-3	-3
		Ability to integrate efficiently and effectively with wider public transport	Extent of integration with strategic PT routes /facilities	0	0	0	2	1	0	0	0	0
			Extent of integration with strategic active mode facilities.	0	0	0	3	0	3	3	3	3
Transition from single occupancy car use to lower-carbon transport options, reducing emissions (33%)	**3. Reduce emissions from transport movements across Greater Christchurch by 2051 (33%)**	Change in emissions from transport movements and improved environmental outcomes	Number of destinations and opportunities along the corridor that would encourage mode shift.	0	1	2	1	2	2	1	2	1
Technical/Feasibility Assessment				**Score**	**Score**							
Costs	Costs of the option (Capex, Property and Opex)			*No route MCA measure – was assessed as part of the mode considerations and short list assessment*								
Constructability	Assessment of constructability / complexity of the option			0	-2	-2	-1	-2	-2	-2	-2	-2
Operational Implications	Assessment of how well the option will integrate with the wider transport network			0	-1	-1	-2	-2	-2	-1	-1	-1
Property Requirements	Scale and magnitude of the property impact along the corridor			0	-1	-1	-1	-1	-1	-1	-1	-1
Consenting and Environmental Impacts	Assessment of the level of consenting complexity/difficulty and the likelihood of obtaining approvals for the proposal and qualitative assessment of key environmental risks			0	-2	-2	-1	-1	-1	-2	-2	-2
Social and Community Impacts	Assessment of the impact on community access and cohesion including consideration of the number of sensitive receivers (schools / hospitals / day cares / etc.)			0	1	1	0	0	0	0	2	-1
Overall score (weighted)				0	-0.4	-0.1	-0.1	-0.1	-0.1	-0.3	0.1	-0.6



9.5.3 Section D Preferred Option

In summary, although Option 7 – Clyde Road to Wairakei Road resulted in the best overall MCA score, the results were highly sensitive to weightings, with various options providing different connectivity benefits, such as stimulating intensification, connecting MRT with key locations (such as the university) and providing directness to the city centre. None of the options were considered to provide overwhelmingly support across the investment objectives.

The Mahaanui Kurataiao (March 2023) report (refer to Appendix B – Report for Mass Rapid Transit Strategic Business Case) sets out that manawhenua have not considered the Airport link in detail and do not hold any position or opinions on the merits or otherwise on an Airport link.

The findings of the MCA process were discussed at a workshop with Waka Kotahi, Christchurch City Council, Environment Canterbury, Selwyn District Council, Waimakariri District Council, Kāinga Ora, Ministry of Housing and Urban Development, Ministry of Transport, Let's Get Wellington Moving, and Greater Christchurch Spatial Plan representatives on the 15 July 2022. A lack of an identified preferred option for an Airport link was discussed in context of the following:

- How to best stimulate intensification and development in the area surrounding the corridor given restrictions associated with airport noise contours;
- The Airport is not anticipated to be classified as a commercial centre under the NPS-UD and as such will not be subject to revised planning provisions supportive of greater intensification in the area surrounding;
- The Airport is well serviced by existing and future committed public transport routes; and
- The University of Canterbury is within walking distance from the proposed south-western MRT corridor (and is well-serviced by other public transport options).

It was concluded that an Airport Link not be investigated further as part of this IBC. However, this does not preclude it from being considered in the future, in context of problems, benefits and objectives related to an MRT expansion to the Airport.

9.6 STAGE 1 CONCLUSIONS AND RECOMMENDATIONS

The assessment process identified the emerging preferred street running corridor as being the Central City Option 5, South West Corridor Option 4 and the Northern Corridor Option 1. When combined (from south to north) the emerging preferred street running corridor extends along:

- Main South Road; Riccarton Road; Riccarton Avenue; Tuam Street; Manchester Street; Kilmore Street; Victoria Street; Papanui Road; and Main North Road.
- This preferred Stage 1 route (Figure 9-9), provided the basis for Stage 2 analysis, which considered extending this street running corridor option to the districts. There are, however, a number of constraints associated with this option (and were common across all Stage 1 options) which will require further consideration going forward:
- How to navigate the bus interchange (ie the Tuam Street, Manchester St, Colombo Street, Lichfield Street block); and
- The location of the corridor through the Hornby Town Centre, including the location that the Stage 1 MRT corridor should terminate

These constraints are considered further in Section 13.2.2 of this IBC.

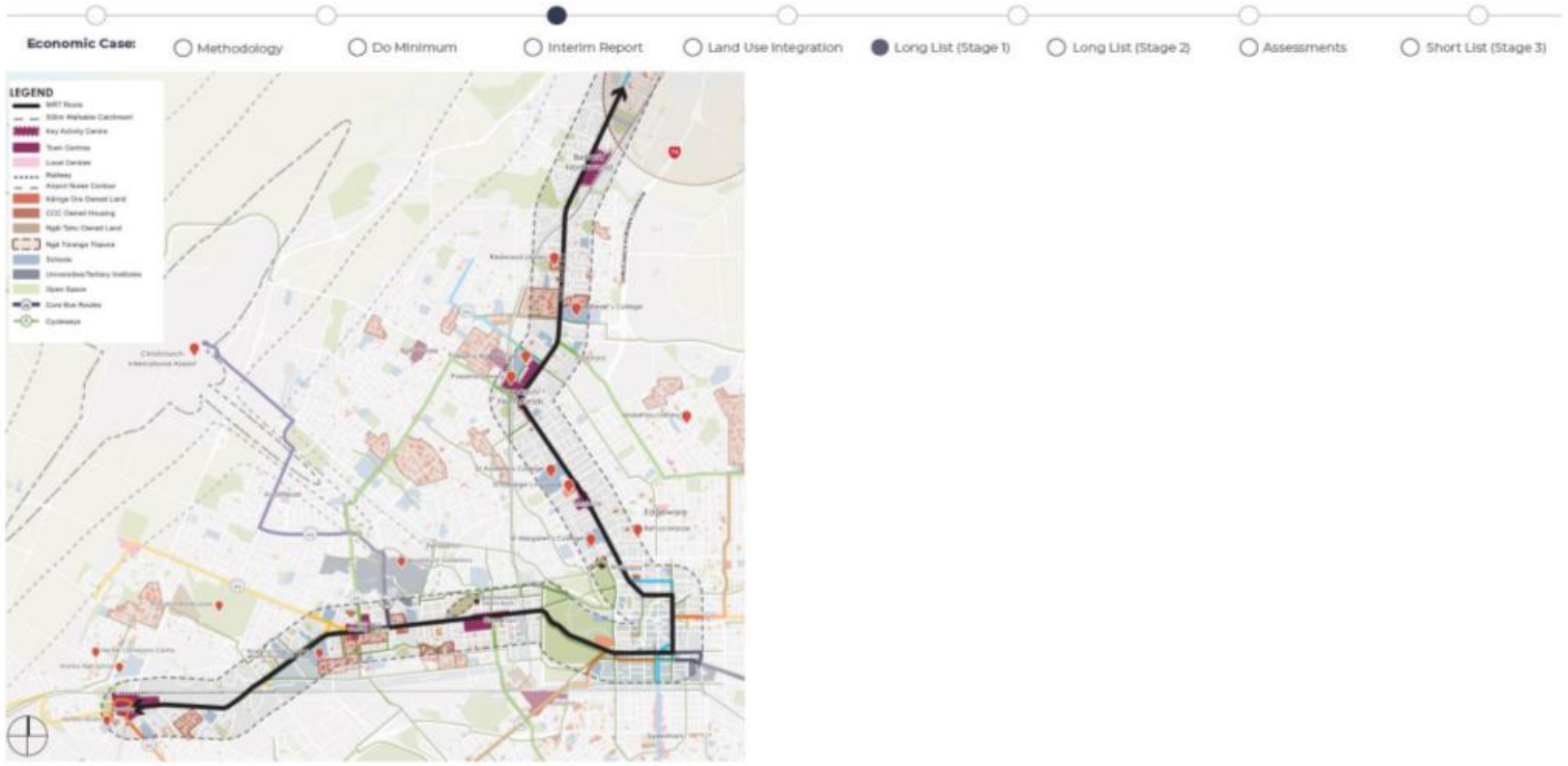


Figure 9-9: Stage 1 Preferred Corridor

10 LONG LIST: ROUTE ASSESSMENT - STAGE 2

10.1 ASSESSMENT OVERVIEW

Stage 2 assessed options for extending street running corridors to the Waimakariri and Selwyn Districts (Figure 10-1):

- North Corridor route extension from Belfast to Waimakariri District
- South West route extension from Hornby to Selwyn District



Figure 10-1: Stage 2 Option development

Manawhenua have reviewed the preferred MRT route (as part of the Stage 2 assessment phase) and have provided a final report setting out their position that informs the IBC (see Appendix B – Report for Mass Rapid Transit Strategic Business Case).

Appendix J Stage 2 Route Assessment outlines in detail the route assessment undertaken for the street running extension options, including the multicriteria assessment undertaken against each KPI. Scoring of the MCA was undertaken by the core consultant project team, with subject matter experts to provide input where required such as consenting, operational and constructability aspects. Key results were shared with key stakeholders at the regular MRT Stakeholder Workshops, with feedback incorporated into the final MCA as appropriate.

The following sub-sections summarises this work, outlining the options assessed and providing a high-level summary of the option assessment against the Investment Objectives.

Overall, six options were considered for the Waimakariri District extension and three options for Selwyn District. As summarised by the following two figures and These options are summarised in and outlined in further detail in the subsequent sections.



Figure 10-2: Route extension options to the Waimakariri District

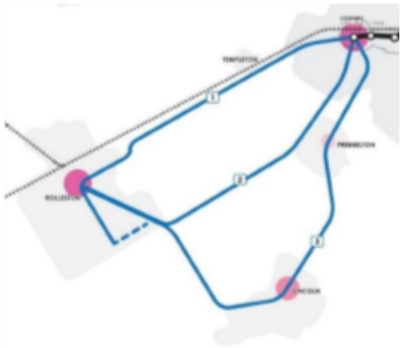


Figure 10-3: Route extension options to the Selwyn District

Economic Case: ○ Methodology ○ Do Minimum ○ Interim Report ○ Land Use Integration ○ Long List (Stage 1) ● Long List (Stage 2) ○ Assessments ○ Short List (Stage 3)

10.2 STAGE 2 WAIMAKARIRI OPTIONS AND ASSESSMENT

10.2.1 Waimakariri District Option Descriptions

Six options were considered for the Waimakariri District Extension as outlined below in Figure 10-4.

Option 1A	Option 1B	Option 2
		
Option 3	**Option 4A**	**Option 4B**
		

Figure 10-4: Waimakariri Assessment Option Descriptions



10.2.2 Waimakariri District Option Assessment

MCA was undertaken across the six options, the results of which are outlined in Table 10-5 for the Waimakariri District extension. The following paragraphs provide a summary of the results against the investment objectives and technical and feasibility criteria.

As agreed with manawhenua, the impacts on Te Ao Māori criteria identified in the Waka Kotahi Multi-Criteria Analysis User Guidance have not been assessed separately. District plan cultural overlays have been considered when assessing the consentability and environmental impacts.

Given that some of the routes traverse and adjoin Māori Reserve 873, any widening of the road corridor would fundamentally be opposed by Te Ngāi Tūāhuriri Rūnanga (refer to Mahaanui Kurataiao Report at Appendix 2 for further commentary).

For Investment Objective 1: *increased proportion of the population within key prioritised locations and along identified transport corridors within Greater Christchurch with improved access to Christchurch's Central City by 2051*:

Table 10-1: Waimakariri District MCA scores for Investment Objective 1

KPI	Waimakariri Option					
	1a	1b	2	3	4a	4b
KPI 1: Change in accessibility to and from the Central City ***KPI 2:*** Change in access to opportunities from prioritised locations ***KPI 3:*** Change in development potential	2	2	0	1	2	2

- Options 1a, 1b, 4a and 4b all scored equally on this investment objective. This reflected the higher numbers of households and employment opportunities captured along these routes, including the forecasted growth along the corridors.
- Option 2 performed the worst of the six assessed options. This option terminates at Kaiapoi, so does not capture populations and employments further north, and hence was scored lower. It also does not contribute or align so strongly with many strategic policy objectives in relation to land-use integration and urban design.
- Similarly, Option 3 terminates at Woodend and does not extend further west to connect with the Rangiora township. This limits the population and employment numbers serviced by MRT. However, it still performs better than Option 2 as it extends further north.

For Investment Objective 2: *improved journey time and reliability of PT services relative to private vehicles within Greater Christchurch by 2051*:

Table 10-2: Waimakariri District MCA scores for Investment Objective 2

KPI	Waimakariri Option					
	1a	1b	2	3	4a	4b
KPI 2: Change in access to opportunities from prioritised locations ***KPI 5:*** Change in journey times and reliability by public transport and private vehicles ***KPI 6:*** Ability to integrate efficiently and effectively with wider public transport	1	1	1	1	1	1

- While equal scores were applied across the options, each option performed differently on each measure underpinning this investment objective. For example, Option 1a (extension to Rangiora via Woodend and Ravenswood), captured some of the highest numbers of key destinations and development sites. However, it is a longer, less direct route. On balance, equal scores were applied to reflect no discernible difference against this investment objective.

For Investment Objective 3: *reduce emissions from transport movements across Greater Christchurch by 2051*:

Table 10-3: Waimakariri District MCA scores for Investment Objective 3

KPI	Waimakariri Option					
	1a	1b	2	3	4a	4b
KPI 7: Change in emissions from transport and improved environmental outcomes	2	2	1	1	2	2

- All options were considered beneficial against investment objective 3, where MRT along each of these alignments is anticipated to reduce emissions by reducing the numbers of private vehicles on the route and encourage mode shift.
- Options 1a, 1b, 4a and 4b were scored the highest given they reach more growth areas and hence a higher potential to improve mode shift. However, no discernible score separation was applied to these four options.

This reflects the high-level assessment that was undertaken of the emissions at this stage of the project.

Technical and feasibility criteria:

Table 10-4: Waimakariri District MCA scores - technical and feasibility criteria

Description	Waimakariri Option					
	1a	1b	2	3	4a	4b
Technical and feasibility criteria	-1.8	-1.4	-1.2	-1.8	-1.6	-1.2

- From a technical and feasibility perspective, Option 2 and 4b scored the highest. Options 2 and 4b were assessed as having the fewest challenges and constraints associated with constructability. Option 2 was also considered have slightly fewer consenting environmental risks, attributed to its shorter alignment terminating in Kaiapoi.
- Option 1b performed moderately well against the social and community impacts. From a technical perspective, this alignment was considered the least challenging and was scored the next best.
- The remaining options 1a, 3 and 4a performed the worst. These were all considered the most challenging from a consentability and environmental, and constructability perspective, as well as property considerations.

Summary:

Overall, Option 2 (MRT extension from the city centre terminating in Kaiapoi) and 3 (terminating in Woodend) scored the worst in achieving the Investment Objectives, because the implementation of MRT is not as fully optimised compared to the other options out to the Waimakariri district. They are also the two worst scoring options overall (accounting for investment objectives and technical/feasibility criteria). Hence, Options 2 and 3 were not recommended as feasible routes to pursue further in terms of MRT extension options to Waimakariri districts.

All the remaining routes: Option 1a, 1b, 4a and 4b, (which all extend of Rangiora), emerged as potentially viable options. They all scored the same against the Investment Objectives, and hence are more closely aligned with addressing the problems statements and achieving the investment objectives underpinning this assessment. However, these options performed quite differently against technical and feasibility criteria along with variable impacts or risks to Māori Land.

Hence, overall, the total scores do vary across these four options (Option 1a, 1b, 4a and 4). In conclusion, further investigation of these four options would be recommended for a preferred route to be selected with greater confidence.

Economic Case: ○ Methodology ○ Do Minimum ○ Interim Report ○ Land Use Integration ○ Long List (Stage 1) ● Long List (Stage 2) ○ Assessments ○ Short List (Stage 3)

Table 10-5: Waimakariri District MCA Summary

PT Futures Mass Rapid Transit IBC MCA (Long List - Stage 2: Street Running Corridor Route Assessment - Waimakariri District Extension)				Do minimum	Waimakariri District Options					
					1a	1b	2	3	4a	4b
Benefit	**Investment Objective**	**KPI**	**Measure**	**Score**	**Score**	**Score**	**Score**	**Score**	**Score**	**Score**
Greater public transport capacity along the transit corridor that can accommodate growth and support high density development around key nodes (33%)	1: Increased proportion of the population within key prioritised locations and along identified transport corridors within Greater Christchurch with improved access to Christchurch's Central City by 2051 (33%)	KPI 1: Change in accessibility to and from the Central City	Total households per kilometre along the route corridor within 500m	0	1	1	1	1	1	1
			Total existing employment numbers within 500 m of the corridor	0	2	3	0	0	2	2
		KPI 2: Change in access to opportunities from prioritised locations	Household growth (2021-2051) within 500 m of the corridor	0	3	2	0	2	2	2
			Increase in the number of jobs within 500 m of the corridor	0	2	3	0	0	2	2
		KPI 3: Change in development potential	Enables high quality public realm outcomes	0	2	1	0	1	2	1
			Contribution and alignment with strategic policy objectives in relation to land-use integration and urban design	0	2	2	0	1	1	1
Improved access to jobs, education and social opportunities (33%)	2: Improved journey time and reliability of PT services relative to private vehicles within Greater Christchurch by 2051 (33%)	KPI 2: Change in access to opportunities from prioritised locations	Number of key destinations and strategic land uses within 500 m walk up catchment	0	2	1	0	1	0	1
			Change in accessibility to comprehensive development sites within 500 m walk up of the corridor	0	2	1	0	1	1	1
		KPI 4: Shift in trips to public transport and active modes	No MCA measure – this required modelling outputs which were not undertaken at this stage of the assessment across all the options. This KPI was assessed as part of the short list assessment.							
		KPI 5: Change in journey times and reliability by PT and private vehicles	Directness of the MRT route relative to the most likely car route	0	0	1	2	2	3	2
			Number of right turns conflicting with oncoming traffic or pedestrian flows (at grade)	0	-3	-2	-1	-2	-1	-2
		KPI 6: Ability to integrate efficiently and effectively with wider public transport	Extent of integration with strategic PT routes/facilities	0	3	3	3	3	2	0
			Extent of integration with strategic active mode facilities	0	2	2	1	2	2	2
Transition from single occupancy car use to lower-carbon transport options, reducing emissions (33%)	3: Reduce emissions from transport movements across Greater Christchurch by 2051 (33%)	KPI 7: Change in emissions from transport movements and improved environmental outcomes	Number of destinations and opportunities along the corridor that would encourage mode shift	0	2	2	1	1	2	2
Investment Objectives Sub-total (weighted scores)				0	2	2	1	1	2	2
Technical/Feasibility Assessment				**Score**	**Score**	**Score**	**Score**	**Score**	**Score**	**Score**
Costs	Costs of the option (Capex, Property and Opex)			0	No route MCA measure – was assessed as part of the mode considerations and short list assessment					
Constructability	Assessment of constructability / complexity of the option			0	-3	-2	-1	-2	-2	-1
Operational Implications	Assessment of how well the option will integrate with the wider transport network			0	-2	-2	-2	-2	-2	-2
Property Requirements	Scale and magnitude of the property impact along the corridor			0	-3	-2	-2	-3	-2	-2
Consenting and Environmental Impacts	Assessment of the level of consenting complexity/difficulty and the likelihood of obtaining approvals for the proposal and qualitative assessment of key environmental risks			0	-3	-3	-2	-3	-3	-3
Social and Community Impacts	Assessment of the impact on community access and cohesion including consideration of the number of sensitive receivers (schools / hospitals / day cares / etc.)			0	2	2	1	1	1	2
Technical/Feasibility Assessment Sub-total (weighted scores)				0	-2	-1	-1	-2	-2	-1
Overall score (weighted)				**0**	**-0.5**	**-0.3**	**-0.5**	**-0.8**	**-0.4**	**-0.1**

Economic Case: ○ Methodology ○ Do Minimum ○ Interim Report ○ Land Use Integration ○ Long List (Stage 1) ● Long List (Stage 2) ○ Assessments ○ Short List (Stage 3)

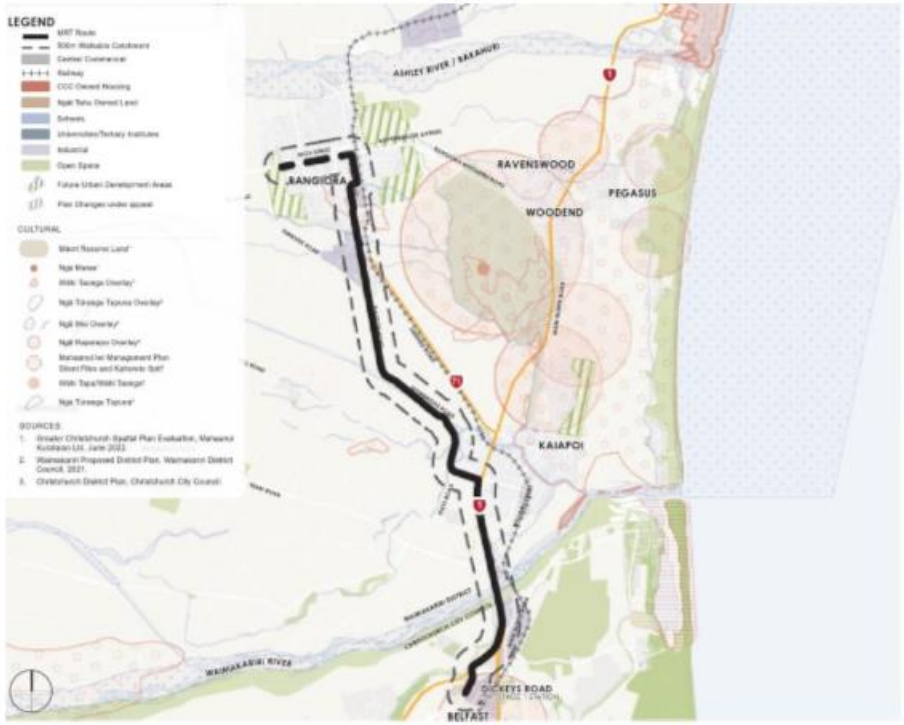
10.2.3 Waimakariri District Preferred Option

In conclusion, further investigation of the four options (Option 1a, 1b, 4a and 4b) would be recommended for a preferred route to be selected with greater confidence. However, to inform Stage 3 analysis, one option was taken forward. This was **Option 4b: Connection to Rangiora more directly via Flaxton Road.**

Option 4b is approx 19.5km in length, as outlined in Figure 10-5. It extends along SH1 between Belfast and Silverstream and along Skewbridge Road and Flaxton Road to Rangiora. There is the potential to extend west of Rangiora centre to connect to emerging growth areas in the west (as shown by the dashed line). The route is presented below along with its key pros and cons

If it was found that this Scenario 3 alignment came out as the preferred overall option during the Stage 3 assessment, then it was expected that this preferred route would then have been looped back into the Stage 2 analysis, to reconfirm the route extension details..

The Mahaanui Kurataiao (March 2023) report sets outs the position held by manawhenua in relation to the Waimakariri District route options. Of critical concern is the establishment of an MRT route via Kaiapoi and Woodend requiring widening of the existing road corridor. A route following the Woodend Rangiora Road directly adjoins Māori Land and cuts through the original extents of MR873, with Māori Land located on either side. Any proposal which may require the future taking of Māori land for the purposes of creating a wider road corridor is fundamentally opposed by manawhenua.



PROS

- Services Rangiora centre and surrounding urban area and serves Silverstream neighbourhood.
- Rangiora identified as an 'emerging metropolitan' centre with opportunity for mixed-use redevelopment and intensification.
- Largely avoids Maori reserve land and wider land holdings.
- More direct route between the city and Rangiora - approximately 19kms in length.

CONS

- Route does not align with Kaiapoi, Ravenswood or Woodend centres.
- MRT utilises Flaxton Road, which passes through a low lying area that is prone to flooding

Figure 10-5: Option 4 B Route alignment, Context and Identified Pros and Cons

10.3 STAGE 2 SELWYN OPTIONS AND ASSESSMENT

10.3.1 Selwyn District Option Descriptions

Three options were considered for the Selwyn District Extension as outlined below in Figure 10-6.

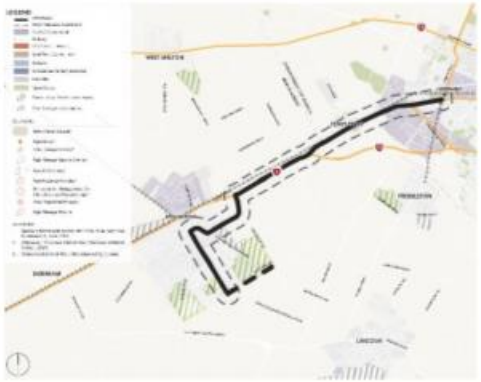
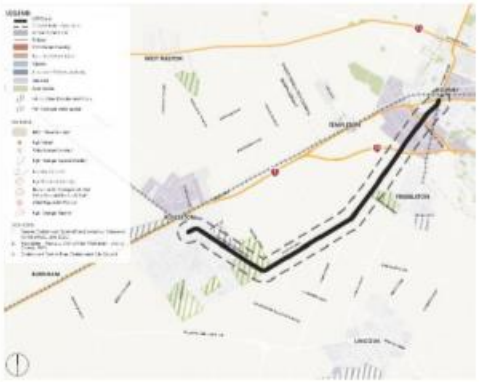
Option 1	Option 2	Option 3
		

Figure 10-6: Selwyn Assessment Option Descriptions



10.3.2 Selwyn District Option Assessment

MCA was undertaken across the three options, the results of which are outlined in Table 10-10. The following paragraphs provide a further summary of the results against the investment objectives and technical and feasibility criteria.

Investment Objective 1: *increased proportion of the population within key prioritised locations and along identified transport corridors within Greater Christchurch with improved access to Christchurch's Central City by 2051*):

Table 10-6: Selwyn District MCA scores – Investment Objective 1

KPI	Selwyn Option		
	1	2	3
KPI 1: Change in accessibility to and from the Central City ***KPI 2:*** Change in access to opportunities from prioritised locations ***KPI 3:*** Change in development potential	2	1	2

- All options were scored positively, which reflects that all were considered to improve access to jobs and employment and contribute to strategic policy objectives.
- Options 1 and 3 scored the highest of the three. This reflected the higher numbers of households and employment opportunities captured along these routes, including the forecasted growth along the corridors. While there are more public realm opportunities associated with the rural townships in Option 3, the number of households captured (within 500 m of the corridor) in Option 1 is highest, resulting in equal scorings between these two options on balance.
- Option 2 (which passes along Shands Road) scored the lowest. This reflects that there are limited public realm opportunities due to the rural nature of the alignment (that, unlike Option 3 that is also rural, does not pass through as many main centres). Option 2 also the lowest numbers of households and employment, including household and employment growth, of the three options.

Investment Objective 2: *improved journey time and reliability of PT services relative to private vehicles within Greater Christchurch by 2051*:

Table 10-7: Selwyn District MCA scores – Investment Objective 2

KPI	Selwyn Option		
	1	2	3
KPI 2: Change in access to opportunities from prioritised locations ***KPI 5:*** Change in journey times and reliability by public transport and private vehicles ***KPI 6:*** Ability to integrate efficiently and effectively with wider public transport	1	1	1

- All options were scored positively as there were expected journey time improvements and positive integration with PT routes.
- Further, all options were scored equally. While each option performed better against certain measures within the assessment, on balance there was no discernible net benefit of one option over the other for this investment objective.
- For example, Option 3 passes through more rural areas within the Selwyn district and is therefore a longer route with more intersections requiring navigating. However, it was assessed as being better integrated with strategic PT routes and hence scored higher in this criterion, resulting in a net score equal to the other two options that have their own strengths and drawbacks.



Investment Objective 3: *reduce emissions from transport movements across Greater Christchurch by 2051:*

Table 10-8: Selwyn District MCA scores – Investment Objective 3

KPI	Selwyn Option		
	1	2	3
KPI 7: Change in emissions from transport and improved environmental outcomes	2	2	1

- All options were considered beneficial against investment objective 3, where MRT along each of these alignments is anticipated to reduce emissions by reducing the numbers of private vehicles on the route and encourage mode shift. Hence, all options were scored positive.
- Options 1 and 2 scored the highest as they both connect to the sub-regional centre of Rolleston with Hornby and the MRT corridor within Christchurch.
- Option 3 scored the lowest, as it provides a less direct connection with the sub-regional centre of Rolleston, which is identified to have the highest population with, therefore, the most potential mode shift.

Technical and feasibility criteria:

Table 10-9: Selwyn District MCA scores - technical and feasibility criteria

Description	Selwyn Option		
	1	2	3
Technical and feasibility criteria	-0.8	-1.2	-1.4

- From a technical and feasibility perspective, Option 3 has the most challenges associated with constructability and property, largely attributed to its rural alignment with narrow roads, passing several sensitive receivers.
- Option 1 scored the highest with the fewest property requirements and anticipated consenting and environmental issues.
- Option 2 performed well against the consentability and environmental impacts measure, but also had disadvantages associated with property requirements so scored mid-range.

Summary

Option 1 (MRT extension from the city centre terminating in Rolleston via Templeton) scored strongly against investment objectives 1 and 3. This reflects the more urban alignment of Option 1 that passes within 500 m of the most numbers of households. It also reflects that this option is the most direct, passing via Templeton on its way to Rolleston.

Option 2 (MRT extension from the city centre terminating in Rolleston via north Prebbleton) performed strongest against investment objective 3, which also reflects the relatively direct nature of this route. However, it did not perform so well against the investment objectives 1 or 2.

Option 3 (MRT extension from the city centre terminating in Rolleston via Prebbleton and Lincoln) performed strongest against investment objective 1. However, it is more rurally routed and less direct, so is unfavourable against investment objectives 2 and 3.

When analysing each technical assessment, each option is sensitive to particular constraints and vary in performance when considering different feasibility/technical assessment criteria.

Therefore, in summary, further investigation of these three options would be recommended for a preferred route to be selected with greater confidence.

Economic Case: Methodology | Do Minimum | Interim Report | Land Use Integration | Long List (Stage 1) | Long List (Stage 2) | Assessments | Short List (Stage 3)

Table 10-10: Selwyn District MCA summary

PT Futures Mass Rapid Transit IBC MCA (Long List - Stage 2: Street Running Corridor Route Assessment - Selwyn District Extension)				Do minimum	Selwyn District Options		
					1	2	3
Benefit	**Investment Objective**	**KPI**	**Measure**	**Score**	**Score**	**Score**	**Score**
Greater public transport capacity along the transit corridor that can accommodate growth and support high density development around key nodes (33%)	1: Increased proportion of the population within key prioritised locations and along identified transport corridors within Greater Christchurch with improved access to Christchurch's Central City by 2051 (33%)	KPI 1: Change in accessibility to and from the Central City	Total households per kilometre along the route corridor within 500m	0	2	1	1
			Total existing employment numbers within 500 m of the corridor	0	2	2	2
		KPI 2: Change in access to opportunities from prioritised locations	Household growth (2021-2051) within 500 m of the corridor	0	2	1	2
			Increase in the number of jobs within 500 m of the corridor	0	3	1	3
		KPI 3: Change in development potential	Enables high quality public realm outcomes	0	1	0	2
			Contribution and alignment with strategic policy objectives in relation to land-use integration and urban design	0	1	1	2
Improved access to jobs, education and social opportunities (33%)	2: Improved journey time and reliability of PT services relative to private vehicles within Greater Christchurch by 2051 (33%)	KPI 2: Change in access to opportunities from prioritised locations	Number of key destinations and strategic land uses within 500 m walk up catchment	0	1	1	2
			Change in accessibility to comprehensive development sites within 500 m walk up of the corridor	0	1	1	2
		KPI 4: Shift in trips to public transport and active modes	No MCA measure – this required modelling outputs which were not undertaken at this stage of the assessment across all the options. This KPI was assessed as part of the short list assessment.				
		KPI 5: Change in journey times and reliability by PT and private vehicles	Directness of the MRT route relative to the most likely car route	0	3	2	0
			Number of right turns conflicting with oncoming traffic or pedestrian flows (at grade)	0	-2	-1	-3
		KPI 6: Ability to integrate efficiently and effectively with wider public transport	Extent of integration with strategic PT routes/facilities	0	2	1	3
			Extent of integration with strategic active mode facilities	0	1	1	2
Transition from single occupancy car use to lower-carbon transport options, reducing emissions (33%)	3: Reduce emissions from transport movements across Greater Christchurch by 2051 (33%)	KPI 7: Change in emissions from transport movements and improved environmental outcomes	Number of destinations and opportunities along the corridor that would encourage mode shift	0	2	2	1
Investment Objectives Sub-total (weighted scores)				0	2	1	1
Technical/Feasibility Assessment				Score	Score	Score	Score
Costs	Costs of the option (Capex, Property and Opex)			0	No route MCA measure – was assessed as part of the mode considerations and short list assessment		
Constructability	Assessment of constructability / complexity of the option			0	-2	-2	-3
Operational Implications	Assessment of how well the option will integrate with the wider transport network			0	-2	-2	-2
Property Requirements	Scale and magnitude of the property impact along the corridor			0	-1	-3	-3
Consenting and Environmental Impacts	Assessment of the level of consenting complexity/difficulty and the likelihood of obtaining approvals for the proposal and qualitative assessment of key environmental risks			0	-1	-1	-2
Social and Community Impacts	Assessment of the impact on community access and cohesion including consideration of the number of sensitive receivers (schools / hospitals / day cares / etc.)			0	2	2	3
Technical/Feasibility Assessment Sub-total (weighted scores)				0	-1	-1	-1
Overall score (weighted)				**0**	**0.1**	**-0.3**	**-0.4**

10.3.3 Selwyn District Preferred Option

In conclusion, further investigation of all three options would be recommended for a preferred route to be selected with greater confidence. However, to inform the Stage 3 analysis, one option was taken forward. This was **Option 1: Hornby to Rolleston via Templeton**.

Option 1 is approximately 17.2km in length, as outlined in Figure 10-7. It extends along SH1 between Hornby and Rolleston and utilises Weedons Road and Levi Road into Rangiora. The route may extend further from Springston Rolleston Road along Selwyn Road (as shown by the dashed line).

The Mahaanui Kurataiao (March 2023) report (see Appendix B – Report for Mass Rapid Transit Strategic Business Case) identifies that the options for the Selwyn District extension have little potential impact on specific cultural values or significant sites and areas. The report recognises that the option connecting Prebbleton and Lincoln provides access to those employment and education hubs, which may benefit whānau living and working in those townships. It is acknowledged that the preferred option in relation to the Business Case objectives is the option from Hornby to Rolleston via Templeton. Manawhenua do not hold any position or opinions on the merits or otherwise of these options.



Figure 10-7: Option 1 Route alignment, Context and Identified Pros and Cons

Economic Case: Methodology | Do Minimum | Interim Report | Land Use Integration | Long List (Stage 1) | Long List (Stage 2) | Assessments | Short List (Stage 3)

10.4 LAND USE SCENARIOS FOR DISTRICT EXTENSIONS

Carrying through the land use integration 'Scenario 3' MRT Focused Growth from Stage 1, the analysis of the Waimakariri and Selwyn Districts utilised the same 'compact' growth model. Testing what densities could be achieved when a more public transport supportive urban form has involved reallocating greenfield growth to varying degrees within the district centres and station catchment (see Figure 10-8)

In order to fully realise and justify the benefits of investment in public transport infrastructure, the current urban form and development patterns within the Selwyn and Waimakariri Districts needs to move away from a predominantly dispersed, urban edge greenfield development approach to a model which provides higher density residential development within the existing priority centres.

The analysis has indicated that current urban development patterns and densities within Selwyn and Waimakariri Districts are unlikely to generate the level of user demand or patronage to support the significant investment required to provide an MRT service in these locations. In order to fully realise the benefits of this level of infrastructure investment, a significant change in urban development and density patterns will be required. As such, both Waimakariri and Selwyn districts will need to investigate a range of regulatory and non-regulatory tools and incentives beyond zoning to drive a change in intensification and land use patterns to support investment in public transport.

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	Existing Situation 2021	Scenario 3:	Scenario 3a:	Scenario 3b:	Scenario 3c:
		2051 Compact Growth	50% of greenfield growth into the centre	100% of greenfield growth into the centre	100% of greenfield growth into the MRT station catchment.
Rangiora					
	Town 12 HH/Ha (average)	Town 17 HH/Ha (average)	Centre 20 HH/Ha (average) Urban Area 15 HH/Ha (average)	Centre 24 HH/Ha (average) Urban Area 12 HH/Ha (average)	Centre 57 HH/Ha (average) Urban Area 12 HH/Ha (average)
Rolleston					
	Town 8 HH/Ha (average)	Town 16 HH/Ha (average)	Centre 19 HH/Ha (average) Urban Area 14 HH/Ha (average)	Centre 39 HH/Ha (average) Urban Area 8 HH/Ha (average)	Centre 97 HH/Ha (average) Urban Area 8 HH/Ha (average)

Figure 10-8: Land Use Scenario Summary for District Extensions

10.5 ALTERNATIVE MRT PHILOSOPHIES

Stage 1 and 2 assessments resulted in a refined Scenario 3, street running (arterial) corridor focused option. This work revised and updated the corridor initially established in the interim Report.

Prior to progressing this option to the Stage 3 (Short List) assessment, the option was 'tested' in the transport model. Of particular interest was the daily patronage (of the full PT network) potential in extending MRT to the Waimakariri and Selwyn Districts. The results shown in in the following figure indicate the following:

- Scenario 3, Stage 1, which is 22 km in length, solely within Christchurch City, would potentially uplift 20,000 passengers per day;
- Extensions (approx. 20 km in each direction) to the districts in Scenario 3, Stage 1 + 2 (SDC & WDC Extension) would provide a further 7,000 uplift per day.

This result raised consideration as to whether there were alternative combinations of Stage 1 within Christchurch City and a complementary minimal solution to the Waimakariri and Selwyn Districts. Two further options were therefore developed:

- Stage 1 'street running (arterial) corridor focused' in Christchurch + complementary motorway based direct bus services to the districts;
- Stage 1 'street running (arterial) corridor focused' in Christchurch + complementary heavy rail to the districts.

These options are referred to as Option 1A and 1C respectively herein, and are described in further detail in Section 1.1 of this report.

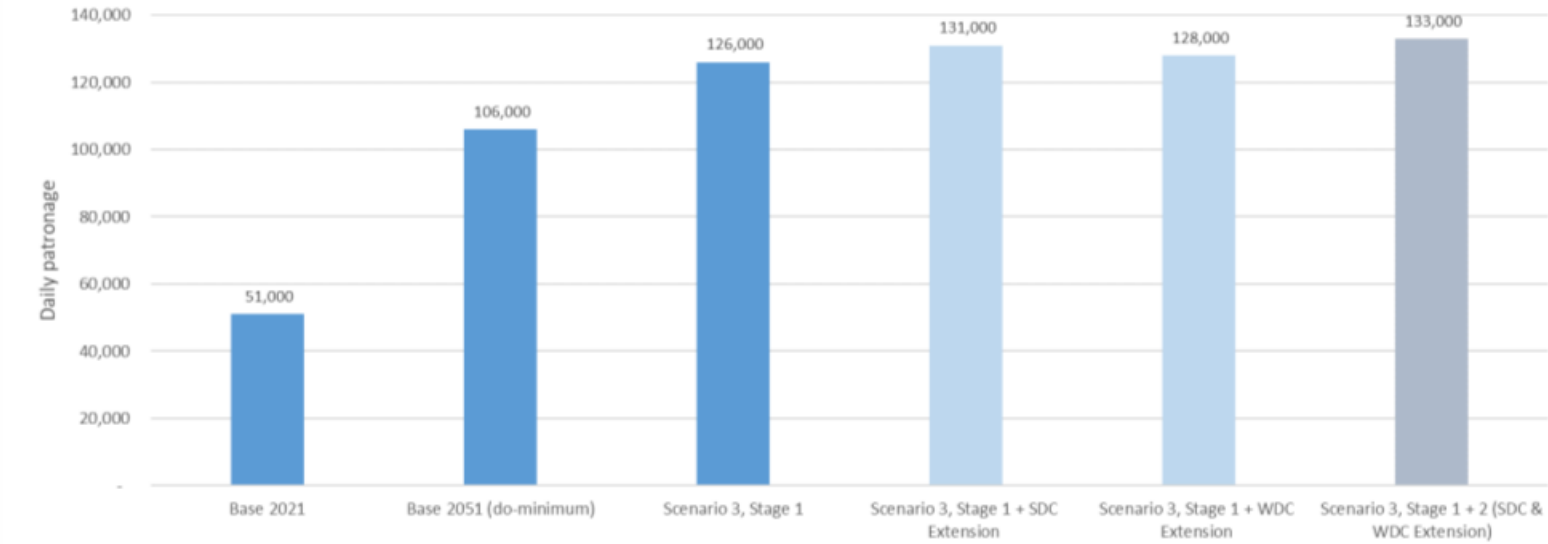


Figure 10-9: Daily Patronage of Scenario 3 District Extensions

11 SUPPORTING ASSESSMENTS

11.1 MODE ASSESSMENT

11.1.1 Assessment Overview

Appendix I – Mode Assessment Paper outlines in detail the mode assessment undertaken for the street running options. Mode assessment was not required for heavy rail, as this would be developed within the existing KiwiRail corridor and hence is assumed to be Suburban Heavy Rail technology.

The following sub-sections summarises the two stage assessment undertaken to identify the preferred mode for the street running options::

- **Screening**: A sieving process undertaken to identify any options that do not align with the strategic outcomes and direction sought by the IBC or to remove any options that have fatal flaws.
- **Long List Multi-Criteria Analysis (MCA):** An MCA assessment undertaken on the mode options retained through the long list screening.

11.1.2 Mode Option Descriptions

Nine mode options were considered in long list screening process:

Rubber Tyre Vehicle Type			
Option 1: Standard Bus	Option 2: Double Decker Bus	Option 3: Articulated or Bi-Articulated	Option 4: Trackless Tram
			
Christchurch (Business as usual)	Auckland Busway	Brisbane Metro bi-articulated bus	CRRC Trackless Tram, China

Tracked – Light	Tracked – Grade Separated			Aerial
Option 5: Light Rail	Option 6: Light Metro	Option 8: Suburban Rail	Option 9: Monorail	Option 10: Gondolas

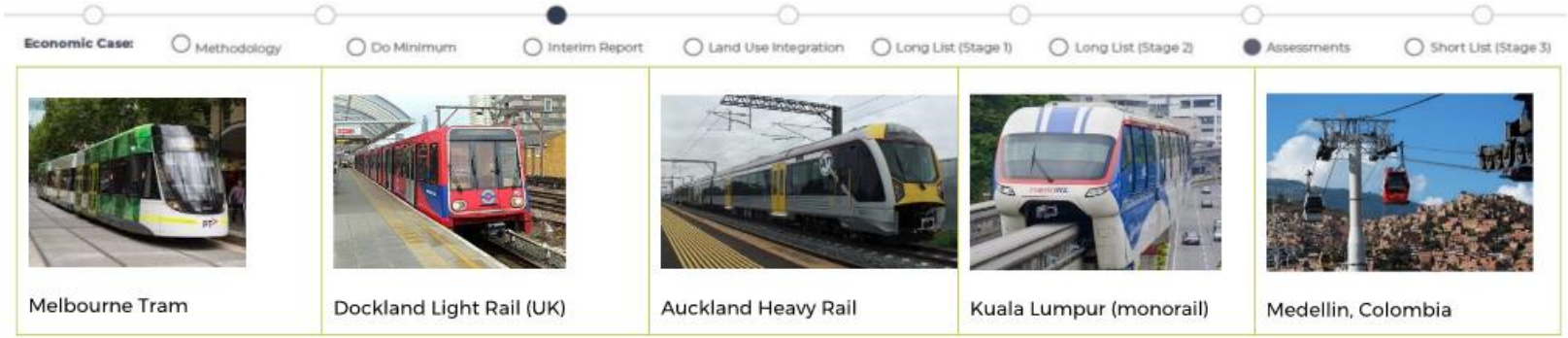


Figure 11-1: Mode options by Vehicle Type

11.1.3 Mode Option Assessment

Mode Screening Assessment

The screening process provided a high-level sieving of mode options, focused on the strategic alignment of each option and affordability and achievability criteria. A summarised Long List Screening table for the mode assessment is provided in Table 11-1

This assessment identified two technologies that were not suitable for street running corridor options. These are Option 8 Suburban Rail (Heavy Rail) and Option 10 Gondolas (Aerial Modes), for the reasons as outlined below

Heavy Rail: The long list screening has highlighted major risks is the feasibility of delivering heavy rail technology on a street running corridor. This option has been discarded due to the narrow width of the corridor and the ability to retro fit for a heavy rail mode.

Note: This assessment does not conclude that heavy rail is not suitable for Greater Christchurch, but rather that it Is not suited for street running.

Aerial: Aerial modes such as gondolas are typically used where terrain is a constraint such as mountainous areas or large bodies of water. Whilst there are examples of gondolas that are used as part of a public transport system, such as London Air Line or Medellin, Columbia, these systems tend to operate point to point rather than serve a corridor of great length. Gondolas are typically slow, with maximum speeds of 30-45 km/h, which would not make this mode suitable for our preferred corridor that has a length of 22km. This mode will fail to meet the investment objective of competitive travel time with a private vehicle.

There is uncertainty if this would drive mode shift and in turn emission reductions. Consequentially, the gondola was discarded from further investigation as it is not a suitable mode for our corridor.

All other technologies are considered to have characteristics potentially suitable for a street running option and hence progressed to the next stage of assessment.



Table 11-1: Mode Selection Sieve Waimakariri District Options

PT Futures Mass Rapid Transit IBC MCA (Mode Selection Sieve)		Waimakariri District Options								
		Option 1 - Standard Bus	Option 2 - Double Decker Bus	Option 3 - Articulated or Bi-articulated	Option 4 - Trackless Tram	Option 5 - Light Rail	Option 6 - Light Metro (above)	Option 8 - Suburban Rail	Option 9 - Monorail Suspended Rail	Option 10 - Gondola
Criteria	**Measure**	**Score**	**Score**	**Score**	**Score**	**Score**	**Score**	**Score**	**Score**	**Score**
Investment Objective 1	Increased proportion of the population within key prioritised locations and along identified transport corridors within Greater Christchurch with improved access to Christchurch's Central City by 2051	Unknown	Pass	Pass	Pass	Pass	Unknown	Unknown	Unknown	Fail
Investment Objective 2	Improved journey time and reliability of PT services relative to private vehicles within Greater Christchurch by 2051	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Fail
Investment Objective 3	Reduce emissions from transport movements across Greater Christchurch by 2051	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Unknown
Potential Affordability	What is the potential achievability of the option (i.e., consentability and constructability)	Pass	Pass	Pass	Pass	Unknown	Unknown	Fail	Unknown	Pass
Potential Achievability	Does the cost of this option fit within the likely funding available or offer a value for money solution?	Pass	Pass	Pass	Unknown	Pass	Unknown	Fail	Unknown	Unknown
Total		**Proceed to MCA**	**Proceed to MCA**	**Proceed to MCA**	**Proceed to MCA**	**Proceed to MCA**	**Proceed to MCA**	**Discard**	**Proceed to MCA**	**Discard**

Mode MCA Assessment

The remaining seven mode options proceeded through full MCA assessment, based on assessing measures relating to the IBC Investment Objectives and Technical/Feasibility Criteria as outline in Table 11-2.

The emerging preferred option for a street running scenario, is either Option 3 **Bi-articulated Bus** or Option 5 **Light Rail**, as these two technologies performed well against the investment objectives and significantly outweigh the other technologies.

The standard bus (option 1) and double decker (option 2) have low implementation risks, but are not expected to achieve the investment objectives to the same extent as Options 3 and 5.

Light Metro (option 6) and Monorail (option 9) score unfavourably due to the risks and cost of implementing these modes in Greater Christchurch. The capacity delivered by these two technologies will greatly exceed the demand forecast by 2051.

Table 11-2: Mode Selection Sieve Mode Options

PT Futures Mass Rapid Transit IBC MCA (Mode Selection Sieve)			Mode Options						
			Option 1 - Standard Bus	Option 2 - Double Decker Bus	Option 3 - Articulated or Bi-articulated	Option 4 - Trackless Tram	Option 5 - Light Rail	Option 6 - Light Metro (above)	Option 9 - Monorail Suspended Rail
Criteria		Measure	Score	Score	Score	Score	Score	Score	Score
Investment Objective Criteria	Capacity	Capacity: If the hourly capacity is satisfied with the demand of 1940 persons by 2051.	0	1	3	3	3	-1	-1
	Stimulate growth	Assessment of the land value uplift and the city's attraction uplift	0	0	1	1	2	1	1
	Travel Time	Assessment of the type of dedication (grade separated versus in-traffic lane) and priority at the intersection to provide a reliable service	1	2	2	2	2	3	3
	Attracts new customers	Assessment of the humanised design of vehicles' appearance, convenience; comfortability	1	1	1	1	2	3	3
Technical/Feasibility Criteria	Costs	High level qualitative assessment of the costs of capital costs and physical works (CAPEX) High level qualitative assessment of the operational costs including infrastructure maintenance (OPEX)	-1	-1	-1	-2	-2	-3	-3
	Resilience & adaptability	Assessment of vulnerability to natural hazards (earthquakes or flooding) or other operational interruptions (i.e., power outages)	-1	-1	-1	-2	-2	-3	-3
	Complexity	Assessment of the modes risk and complexity of the infrastructure construction. This includes the considerations of a mode depot.	-1	-1	-1	-3	-2	-3	-3
Total			-1	1	4	0	3	-3	-3

11.1.4 Mode Technology Conclusions

With Bi-articulated Bus and Light Rail emerging as the two preferred mode options, sensitivity analysis was undertaken to test transparently potential differentiating scenarios and identify the significance/materiality of different criterion. The sensitivity testing confirmed that Light Rail outperforms the Bi-articulated Bus when considering the investment objectives. However, the Bi-articulated Bus preforms better when all factors are considered equal or there is a focus on risk and affordability. The sensitivity tests reinforce that both Light Rail or Bi-articulated Bus could be appropriate for a street running option MRT option. Capacity, attractivity and complexity may become differentiators between these two modes during more detailed analysis carried out at a DBC.

Arterial Street Running: It was decided that further assessment to identify the preferred corridor for Arterial Street running options would be mode agnostic between Light Rail and Bi-articulated bus, with the final mode technology decision deferred to work beyond the IBC.

Motorway Street Running: For the Motorway Street running option, the assumed mode is limited to Bi-articulated bus. This is considered more appropriate for a motorway scenario given rubber tyred vehicles can be designed in exceptional cases for higher (up to 100km/hr) speed environment. Higher speed LRT could be considered but its increased price and technicality would make it less advantageous, thus removing its usefulness in our optioneering process.

Heavy Rail: The rail scenario would be developed within the existing KiwiRail corridor and hence is assumed to be Suburban Heavy Rail technology.

Table 11-3: Short List: Mode Technology Vehicle Category

	National or Global Examples	Assumptions	
Rubber Tyred: Articulated or Bi-Articulated	 Brisbane Metro "Light Tram" – 24.5 bi-articulated bus.	▪ Nominal Speed: 70-90 km/h, Lane Width Required: 3.2 - 3.5m ▪ Capacity (passengers): Higher capacity than a conventional or single articulated bus. (150-170 total) Approx. 60 seated ▪ Shared running possible : Yes ▪ At Grade / Separated: At Grade	▪ Infrastructure: The length of the units may require longer station platforms. No specifically designed tracks (except for dedicated bus lanes). Pavement strengthening may be required due to the axle load for battery powered versions. Dedicated depot and charging facilities may be required.
Tracked – Light: Light Rail	  Melbourne Tram Bordeaux Light Rail	▪ Nominal Speed: 70km/h, Lane Width Required: 3.4m ▪ Capacity (passengers): 210 per 33m unit 64 seats / 420 per 66m unit 128 seats. ▪ Shared running possible : Yes ▪ At Grade / Separated: At Grade (except where it crosses heavy rail lines). Assume it can cross tram tracks at-grade.	▪ Infrastructure: Tracks required, track slab, additional drainage and power supply (dependant on battery technology).

11.2 STOP ASSESSMENT

11.2.1 Assessment Overview

The station locations were initially identified across all three scenarios (Heavy Rail Scenario; Motorway Street Running and Arterial Street Running) as part of the Interim Report. Station locations were generally based on unlocking opportunities and building a public transport supportive urban form.

The principles used to identify the stop locations were: (Figure 11-2)

- Stations as gateways – key origin and destination points
- Legible hierarchy – by prioritising high opportunity areas
- Land use integration – aligning with highest density of residential and employment
- Enhancing accessibility – though network integration – include walkable catchments

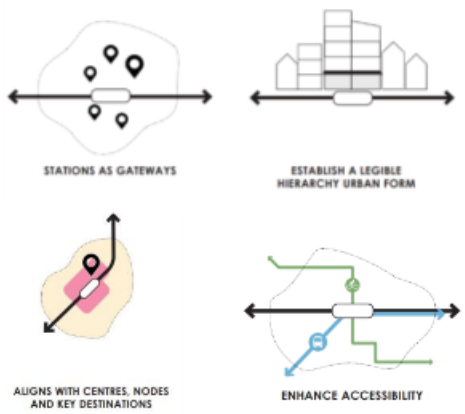


Figure 11-2: Principles used to Identify the Stop Locations

Arterial Street Running

Station stop locations have been identified based on the following priorities:

- First: Locate stations at major demand destinations such as Key Activity Centres (KACs) and City centre
- Second: Locate stations at nodes with high clusters of economic focus and/or every-day need activities such as schools, basic community facilities, supermarkets. Intersecting main streets with existing bus routes and proposed new routes, connections to public transport corridors, main cycle corridors.
- Third: Consider the need for additional stations for intermediate residential coverage.

Stop locations ideally satisfied all three priorities, by being situated in dense area of activity with existing PT and/or cycle links and surrounding residential development, however the spacing of KACs within Christchurch means this will be unlikely.

Potential stop locations that did not meet all priorities, were assessed n their proximity to key employment and education nodes, as well their ability to connect with bus and cycle routes that intercept the proposed MRT route.

Coverage gaps, based on catchment analysis of 800m outside the Central City and 400m in the Central City, are then assessed to determine whether additional stops are required.

Motorway Street Running

The motorway street running option (a refined form of Scenario 2 in the Interim Report) provided limited stop locations based on logical opportunities where the motorway aligned with destinations, key public and active transport connections, and locations that could be accessed by wider residential catchments. Consideration was given to under and over passes. This would provide opportunities for vertical interchanges, which would increase accessibility to stations and reduce severance.

Heavy Rail

The heavy rail option (a refined form of Scenario 1 in the Interim Report) provided stations in proximity to existing centres, maximising intensification and urban integration opportunities. Station consideration was also given to strategic interchange opportunities based on the wider public transport network and stop locations already defined by the existing rail corridor.

11.2.2 Stop Location Conclusions

The station stop locations assumed in the Interim Report were refined are outlined below for the short list assessment, with the refined stop locations and 800m catchment boundaries illustrated in Figure 11-3.

Arterial Street Running – Station stops associated with Scenario 3 from the Interim Report, were refined to reflect the finalised stage 1 and 2 route

Motorway Street Running – Station stops relating to Scenario 2 from the Interim Report were refined as follows:

- Stops shifted to Prestons and Belfast roads, as a result of the route being adjusted to use SH74 instead of Main North Road.
- An additional stop at Ravenswood, based on the route extending here from Woodend, based on more recent understanding of growth potential in this area.

Heavy Rail - Station stops relating to Scenario 1 from the Interim Report were refined to remove the station at Chaneys due to the indicative low boardings

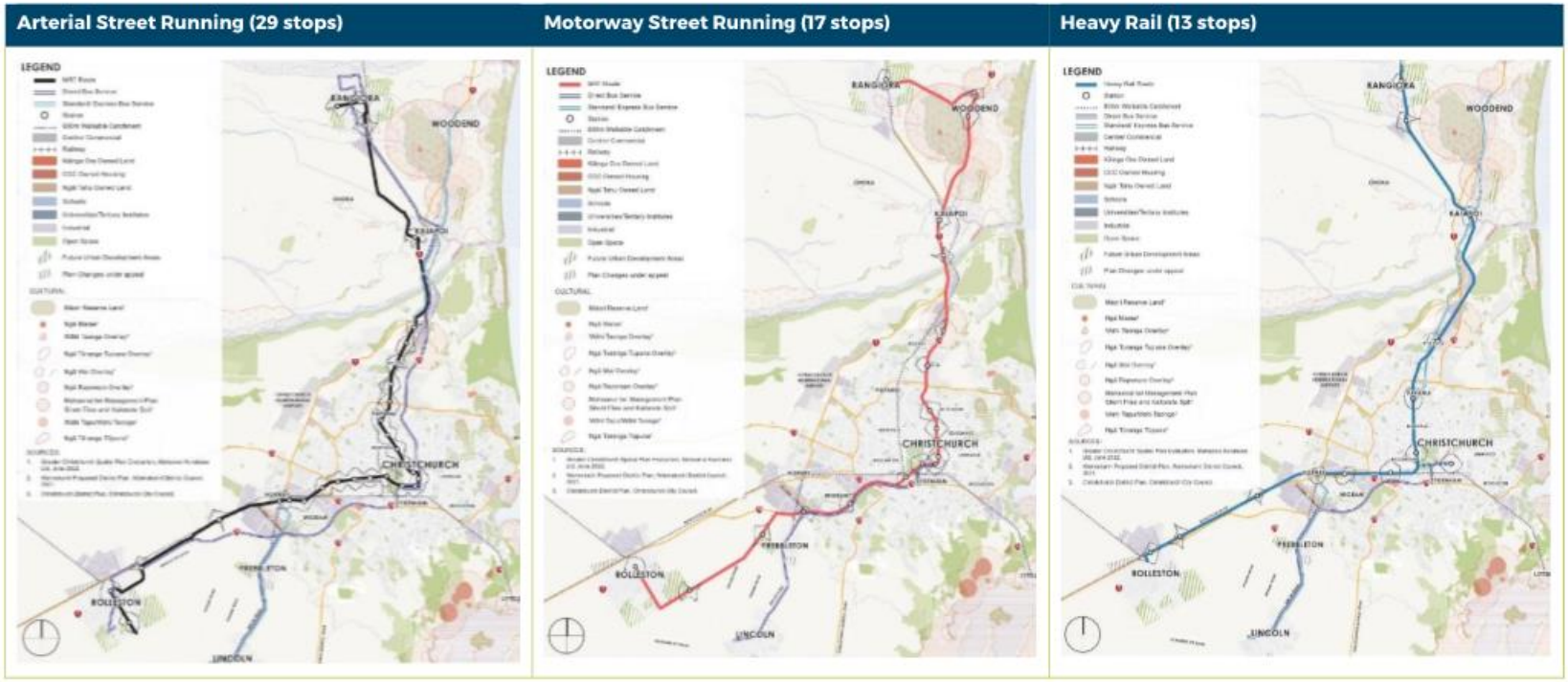


Figure 11-3: Stop Location

11.3 HEAVY RAIL ASSESSMENT

11.3.1 Assessment Overview

The Heavy Rail option developed in the Interim Report (Scenario 3) was further refined prior to undertaking the short list assessment. This section summarises refinement of the rail option, supported by further detail in Appendix Y – Mass Rapid Transit Rail Options.

While the 'route' was generally fixed based on the existing heavy rail lines, the scoping requirements relating to service patterns, infrastructure, fleet and energy were further investigated to establish one or more plausible option for consideration in the short list MCA.

To inform rail options(s), suitable for delivering solutions to the identified problem statements for MRT, scope requirements were defined as outlined below:

Component	Description
Level Of Service	Quick, frequent, reliable, and high-capacity public transport service that operates on a permanent route largely separated from other traffic. Able to provide an integrated customer experience with PT Futures planned enhancements.
Alignment	Aligned as much as possible to the most advantageous corridor, defined by the north and southwest corridor envelopes, servicing the city centre, and connecting to the districts.
Fleet, Technology	Attractive level of service comparable with modern Light Rail or Bus Rapid Transit 'trackless' trams. Able to provide an integrated customer experience with PT Futures planned enhancements. Able to support decarbonisation targets
Facilities	Number and Location of stations that support the level of service and connectivity described above
Network integration	Separated corridor that allows high frequency services while removing safety issues and consequential network impact

11.3.2 Option Descriptions

As a result of the option development and refinement process developed through the IBC, two options were put forward for the shortlist which meet the requirements outlined in the scope above.

Option 3

- Option 3 is a refined version of Scenario 1 – Heavy Rail, initially developed in the Interim Report. It connects Rolleston with Rangiora via Christchurch Central City along the existing heavy rail route. This option includes an additional rail connection to the Central City as a 'spur' from the main line.
- This option aims to make use of existing rail infrastructure, with improvements to optimise the requirements defined in the scoping table to advantageously deliver on the MRT IBC Investment Objectives.
- This option can be defined as a full or heavy investment rail option. It instinctively comes across as requiring an investment commensurate to the provision of 50km of suburban and urban high level of service metro rail. It also appears that most of the rail corridor and associate stations are currently eastern to the most advantageous corridor, aligning to spatial planning and resulting land use. Option 3 is, therefore likely to require a high capital investment and return benefits that may be lower than an alignment on the optimal corridor.

Option 1c

- Option 1c provides a 'cheaper' rail investment solution that combines:
  - a short street running MRT corridor to capture higher benefits by following a route that aligns better with the optimum corridor
  - a do-minimum heavy rail link to districts, to provide the benefits from converting longer trips from the districts to MRT.
- This option evolved as a result of early analysis suggesting a lower capital investment rail solution, could be a superior option to a street running MRT solution extending all the way to the districts.
- Option 1c was, therefore, defined to provide a 'cheaper' rail investment solution that combines with a short street running MRT corridor to capture higher benefits by following a route that aligns better with the optimum corridor and links to districts.
- It is accepted that many other start-up service and interim fleet solutions could be viable projects in their own right, however these were not consider suitable to deliver a solution fitting to the long term horizon defined by this IBC.

11.3.3 Option Development

Option 3: Heavy Rail MRT

In detailing this option, the services and frequencies, runtime estimations, indicative timetable and network analysis was developed in consultation with KiwiRail. The network timetable was overlaid against the existing track and signalling infrastructure, allowing for an assessment of what infrastructure upgrades would be required to support the envisaged passenger service.

Tracks schematics were developed to illustrate a realistic set of minimal network interventions. The choices made to define these were based on institutional knowledge of the network confirmed by interaction with KiwiRail at a national level, and as represented in the OpenTrack model. Full network simulations have not been undertaken for this level of analysis. However the interventions required, particularly in terms of the degree to which double tracking and junction upgrades are required, can be estimated with a reasonable degree of confidence based on knowledge of current KiwiRail network development policy and capacity planning, as applied across New Zealand's urban and sub-urban networks.

To determine suitable service patterns associated with the heavy rail options(s), the design process included an iterative processes that refined assumptions leading to plausible options that realistically represented the likely most advantageous ratio of benefits over costs within the boundaries of the options requirements. Alternatives that quite obviously led to higher costs without additional benefits were naturally discarded. Similarly, lower costs alternatives that cannot support the Mass Rapid Transit level of services envisaged were discarded. For option 3 these notably included:

- A surface corridor to connect the existing network to new city centre stations. This was considered as a lower capital alternative to an underground or aerial spur. It was discarded because its consequential effect on other modes presented irreconcilable operational and safety conflicts. We noted that when refined to mitigate these issues, the options' capital requirements increased to reach that of an underground spur.
- The use of passing loops to minimise the need for double tracking and minimise bridge works. This approach was considered along the option's alignment and while it may be realistic in places, it builds in constraints to the operation of the network that are not compatible with the levels of frequency and reliability required of an MRT solution. The analysis that led us to this conclusion is based on our team's experience of the level of track utilisation commonly achieved on the Wellington and Auckland networks. These networks represent a good indication of a true urban mixed service network and applying more optimistic track utilisation assumptions to the design of Option 3 would make it implausible.

A summarised description of this option, along with key overarching assumptions, is outlined in Section 12.2.5.

Option 1c: Arterial Street Running MRT (ChCh only) + heavy rail to districts

In detailing this option, an indicative timetable was developed and input to a network analysis showing the interaction of the services envisaged for the option and other traffic on the rail network. Assumptions underlying the use of the network by Tourist services and Freight were taken as conservative and in accordance with our consultation with KiwiRail.

Integrating a high frequency mass passenger service within a low frequency freight operation necessarily creates conflicts that will require significant organisational alignment. Questions of freight priorities and detailed aspects of Network Access Agreements that constrain passenger operation were conservatively assumed as resolved to reach a reasonable indicative operational pattern and avoid the risk of landing on an overly designed solution.

A summarised description of this option, along with key overarching assumptions, is outlined in Section 12.2.3.

12 SHORT LIST: STAGE 3 ASSESSMENT

12.1 ASSESSMENT OVERVIEW

The Stage 3 assessment considers a range of options initally developed from the Interim Report and refined and added to throughout subsequent stages of this IBC. The options considered within Stage 3 incorporate the preferred mode technologies and stop patterns previously identified.

Scoring of the MCA was undertaken by the core consultant project team, with subject matter experts to provide input where required such as consenting, operational and constructability aspects. Key results were shared with key stakeholders at the regular MRT Stakeholder Workshops, with feedback incorporated into the final MCA as appropriate.

Appendix N – Stage 3 Short List Route Assessment outlines in detail the route assessment undertaken for each shortlisted option, including the multicriteria assessment undertaken against each KPI. This report also provides a summary of the data behind the MCA, including all the quantitiative results and overview comments against each of the qualitative measures. Annex 3 of this Appendix provides commentary across all the quantitative and qualitative data used in the MCA. This is also supported by Appendix P – KPI Assessment Report, which further outlines the quantitative assessments.

As agreed with manawhenua, the impacts on Te Ao Māori have not been included with the MCA but are considered in parallel criteria identified in the Waka Kotahi Multi-Criteria Analysis User Guidance. This guidance has not been assessed separately. On behalf of manawhenua, Mahaanui Kurataiao has reviewed the Stage 3 assessment and have provided a report that informs the IBC in respect of manawhenua priorities and values (see Appendix B – Report for Mass Rapid Transit Strategic Business Case).

The development of each of the five options considered in the Short List (Stage 3) is summarised below, with the options and development progression illustrated in Figure 12-1.

Option 1: Three sub options are considered under Option 1, each are street running (arterial) corridor focused options, refined from Scenario 3.

- **Option 1A: Arterial Street Running MRT (Christchurch only) + direct buses to districts:** This option takes Scenario 3 Stage 1 preferred route which extends from Hornby through the city centre, to Belfast and combines it with direct bus services to the districts. This is effectively a combination of Scenario 3 Stage 1 preferred route and a minimised motorway (Scenario 2) option. Note high frequency direct bus services to the districts and associated park and rides are already assumed under the PT Futures business case and hence in the do-minimum option.
- **Option 1B: Arterial Street Running MRT (Greater Christchurch):** This option is the result of the Stage 1 and Stage 2 assessment. It combines the preferred alignments for extension from the Central City to the Waimakariri District and Selwyn District. Note although this option was primarily derived from Scenario 3, as part of the Stage 2 district extensions assessment, it also considers portions of the route that were also motorway running, hence was also derived from aspects of Scenario 2.
- **Option 1C:** Arterial Street Running MRT (Christchurch only) + heavy rail to districts: This option takes the Scenario 3 Stage 1 preferred route which extends from Hornby through the city centre, to Belfast and combines it with heavy rail to the districts. The heavy rail service assumes utilisation of the existing rail infrastructure provisions with minimal upgrades. This option is effectively a combination of Scenario 3 Stage 1 preferred route and a minimised heavy rail (Scenario 1) option.

Option 2: Motorway Street Running (limited stops): This reflects Scenario 2 from the interim report. This option comprises MRT between Rolleston and Rangiora via Christchurch City, generally using the existing motorway along the length of the alignment. Prior to the short list assessment this option was further developed and refined from the Interim Report, as outlined further in this section under the Option Descriptions.

Option 3: Heavy rail: This reflects Scenario 1 from the interim report. This option comprises heavy rail MRT between Rolleston and Rangiora via Christchurch City. The route follows the alignment of the existing rail infrastructure with a spur proposed to connect to central Christchurch. Prior to the short list assessment this option was further developed and refined from the Interim Report, as detailed in Section 11.3, and summarised below under the Option Descriptions.

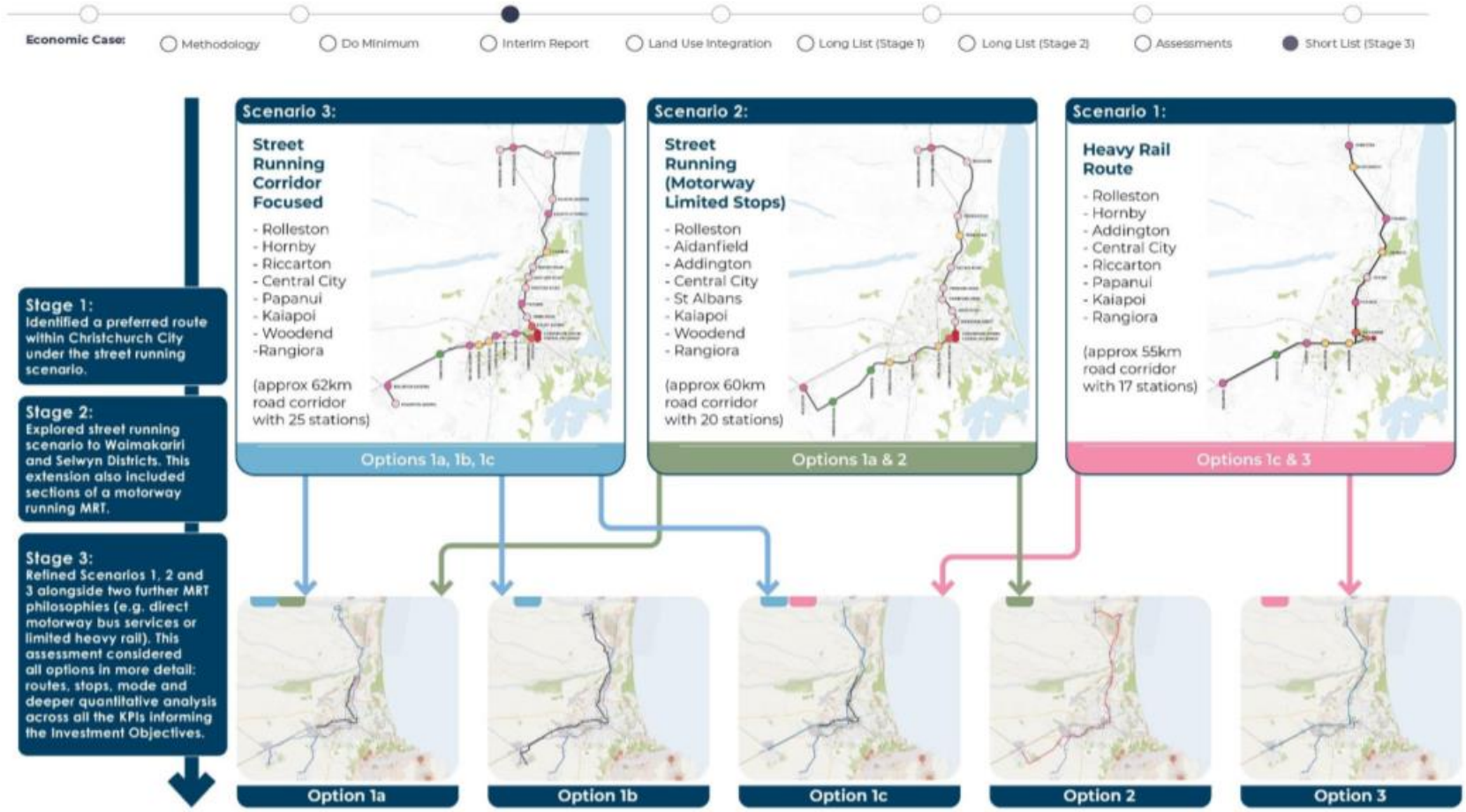


Figure 12-1: Stage 3 Route Options



12.1.1 Option Development Methodology

To ensure that all options are comparable to inform the multicriteria analysis at the short list stage, all option details were developed to a similar level of scope whereby:

- The route was confidently confirmed;
- Concept station locations and hierarchies were established, including growth predictions in collaboration with GCSP.
- Services were defined by way of headway (frequencies) and capacities.
- Reasonable assumptions were made in terms on network integration, across the arterial, motorway and rail networks, noting regardless of the outcome all options would need greater resolution in regard to this, to be developed through the DBC.
- All options required a level of assumption in terms of operational impacts and infrastructure requirements associated with this:
  - For the street running arterial options this related to left in – left out restrictions and integration at intersections, the freight network, the PT network.
  - For the motorway running this also affected left in and left out restrictions and the extent to which u-turns were available along the network.
  - For the heavy rail this extended to impact on rail freight, level crossings and connection to the city.

To provide confidence around the various assumptions made, sensitivity tests were undertaken across a number of elements including network and operational implications (Sensitivity test 2) and Economics (Sensitivity test 4) as outlined further in Section 12.4 of this IBC.

Descriptions of each of the options along with some key assumptions are outlined in the following subsection, with further detail provided in the relevant supporting appendices.

12.2 OPTION DESCRIPTIONS

12.2.1 Option 1 A - Arterial Street Running MRT (ChCh only) + direct bus services

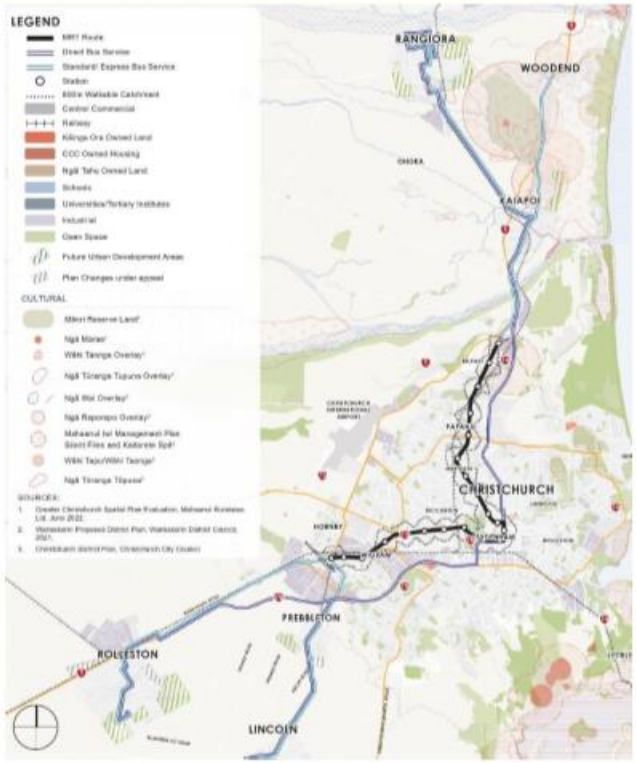


Figure 12-2: Option 1A Arterial Street Running MRT (ChCh only) + direct bus services

Length: Approximately 22km

Mode: BRT or LRT

Stations: 21 stops

Utilises the preferred Stage 1 arterial street running MRT for Christchurch City, extending between Hornby and Belfast.

Direct bus services, proposed under PT Futures (and provide in the do minimum base) are utilised to provide a direct PT connection from Christchurch City centre to Kaiapoi and Rangiora in the north and Lincoln and Rolleston in the southwest.

If this option is preferred then potential upgrades to the direct bus services/infrastructure will need further consideration.

Key Assumptions:

- Headway of 5 minutes during morning and evening peak periods and 10 minutes at other times;
- The current direct bus services connect the districts direct to Christchurch City Centre via the fastest route available, which tends to be the motorway routes. These frequency of these bus services will be increased to an all day service, with a headway of 15-20 minutes as recommended in PT Futures.
- The current standard bus services (including the express services in the peak periods) will be modified to connect into the MRT network at Hornby and Belfast
- There would be mode separation of LRT and heavy rail at any interface points;
- No large-scale corridor widening would occur and there may be strategic land acquisitions required to deliver the project outcomes near stations and major intersections;
- There will be 'Park and Ride' at the Belfast terminus stations and one to be investigated near Hornby.

Economic Case: ○ Methodology ○ Do Minimum ○ Interim Report ○ Land Use Integration ○ Long List (Stage 1) ○ Long List (Stage 2) ○ Assessments ● Short List (Stage 3)

12.2.2 Option 1 B - Arterial Street Running MRT (Greater ChCh)

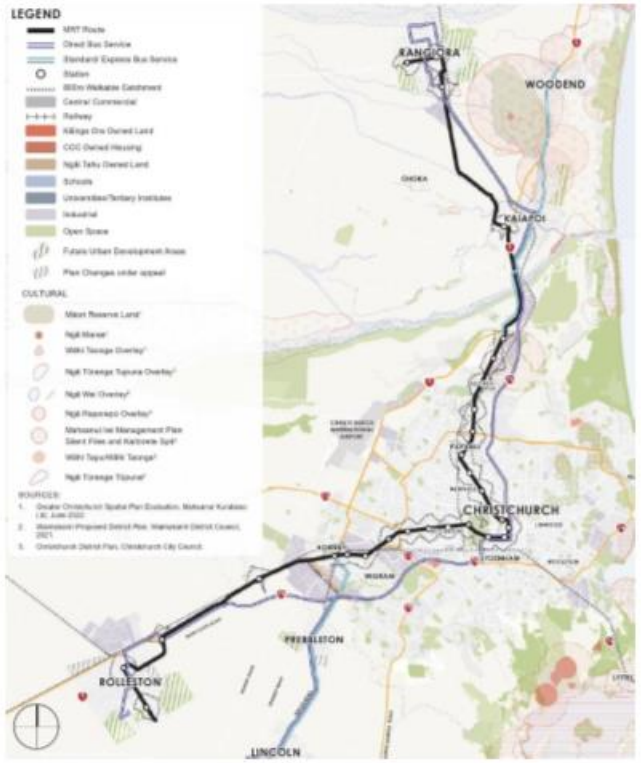


Figure 12-3: Option 1 B - Arterial Street Running MRT (Greater ChCh)

Length: Approximately 59km

Mode: BRT or LRT

Stations: 29 stops

Street running MRT option extending from Rolleston via Christchurch Central City to Rangiora (i.e., combination of the preferred Stage 1 and Stage 2 routes);

The northern leg to Rangiora assumes a connection via SH1 and Flaxton Road, including a station at Kaiapoi.

The southwestern leg connecting Rolleston utilises the SH1/Main South Road via Templeton, terminating at the southern end of Rolleston;

The preferred extension alignments to Waimakariri and Selwyn District were inconclusive in Stage 2. Hence, if this option is preferred then the route extensions would need further investigation prior to being finalised;

Key Assumptions:

- Headway of 5 minutes during morning and evening peak periods and 10 minutes at other times;
- The supporting bus network is that described in the PT Integration Paper, excluding the duplication of Route 1 & 5;
- Wider network effects of MRT at Hornby and transit malls need to be addressed;
- There would be mode separation of LRT and Heavy Rail at interface points;
- The preferred mode technology could be procured with specifications that are suitable for operations in both urban and rural environments;
- The challenges with operating MRT through rural intersections could include a high-speed environment not suitable for traffic lights, and it is not common for MRT to operate through roundabouts in a rural context;
- LRT could negotiate 90-degree bends (particularly in Rolleston and Rangiora). This would need to be tested if this was a preferred way forward;
- Stop locations will not be placed (and hence, intensification will not occur) within the high-risk flood areas identified along Flaxton Road. In addition, MRT infrastructure could be designed to mitigate high risk flood areas;
- The SH1 & SH76 interchange would require new bridge structures.

Economic Case: ○ Methodology ○ Do Minimum ● Interim Report ○ Land Use Integration ○ Long List (Stage 1) ○ Long List (Stage 2) ○ Assessments ● Short List (Stage 3)

12.2.3 Option 1 C - Arterial Street Running MRT (ChCh only) + heavy rail to districts

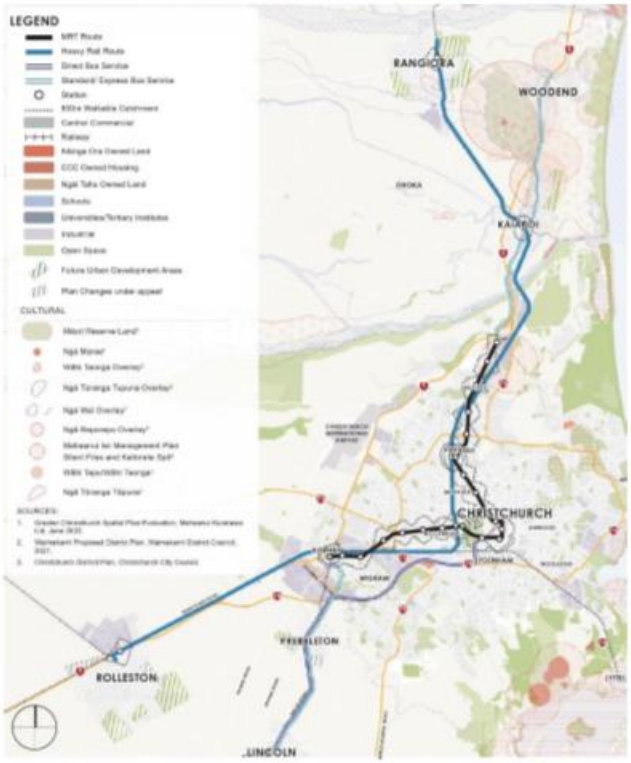


Figure 12-4: Option 1 C - Arterial Street Running MRT (ChCh only) + heavy rail to district

Length: Approximately 22km + 58km heavy rail

Mode: BRT or LRT, plus heavy rail

Stations: 6 heavy rail stops and 21 MRT stops

Utilises the preferred Stage 1 arterial street running MRT for Christchurch City, extending between Hornby and Belfast.

Complementary heavy rail (approximately 58 km in length) is also proposed to provide a MRT connection to Kaiapoi and Rangiora;

Transit hubs would be required in Hornby, Deans Avenue and Papanui to connect the rail service and street running MRT.

Key Assumptions:

- Aims to capitalise on the existing rail infrastructure provisions. As a result, the complementary heavy rail line is assumed to remain single-tracked to the north but will require double tracking between Hornby and Rolleston and signalling upgrades north of Belfast;
- A 30-minute headway for the rail service was assumed for this option. This headway is limited by the single track on the Main North Line and limited passing loops at stations;
- A passenger service every 30 minutes would not trigger the need to grade separate level rail crossings;
- An existing railing siding along the corridor could be repurposed to house the six trains required and heavy maintenance activities could be undertaken by KiwiRail at existing facilities;
- The supporting bus network is that described in the PT Integration Paper;
- The heavy rail stops only include those at priority centres in the Greater Christchurch Spatial Plan, from Option 3;
- All MRT design assumptions are the same as Option 1a.

Economic Case: ○ Methodology ○ Do Minimum ○ Interim Report ○ Land Use Integration ○ Long List (Stage 1) ○ Long List (Stage 2) ○ Assessments ● Short List (Stage 3)

12.2.4 Option 2 - Motorway street running (limited stops)

Note this option was refined since the interim report as detailed below:

- Runs down SH74 (Christchurch Northern Corridor) instead of Cranford and Main North Road (to differentiate from the arterial street running option and try to consistently align with the motorway)
- At Woodend the route extends to Ravenswood, based on more recent understanding of growth potential in this area.

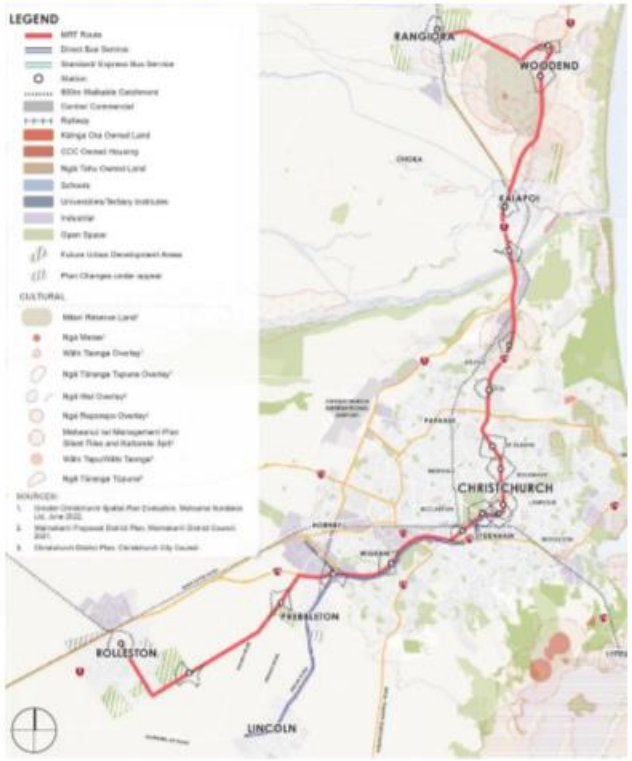


Figure 12-5: Option 2 - Motorway street running (limited stops)

Length: Approximately 60km

Mode: BRT

Stations: 18 stops

This reflects Scenario 2 from the interim report. It connects Rolleston with Rangiora via Christchurch Central City, generally utilising the motorway corridors with limited stops.

Key Assumptions:

- Headway of 5 minutes during morning and evening peak periods and 10 minutes at other times;
- Given the route traverses and adjoins Māori Reserve 873, any widening of the road corridor would fundamentally be opposed by Te Ngāi Tūāhuriri Rūnanga (refer to Mahaanui Kurataiao Report at Appendix B – Report for Mass Rapid Transit Strategic Business Case for further commentary).
- The supporting bus network is that described in the PT Futures Combined Business Case Medium Term Option;
- The infrastructure required is similar to the Auckland Northshore Busway (i.e., running parallel to the motorway rather than shoulder running). Within the urban centres the design philosophy is similar to Option 1a of this report;
- Consideration was made that this route interfaces with a Speed and Infrastructure Programme project in Waimakariri, which would not be incongruent with MRT.

Economic Case: ○ Methodology ○ Do Minimum ● Interim Report ○ Land Use Integration ○ Long List (Stage 1) ○ Long List (Stage 2) ○ Assessments ● Short List (Stage 3)

12.2.5 Option 3 – Heavy Rail

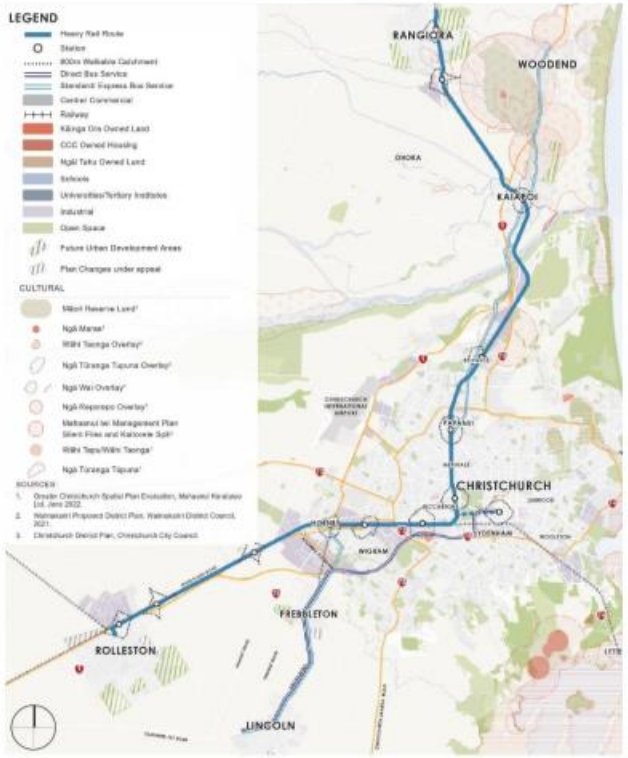


Figure 12-6: Option 3 – Heavy Rail

Length: Approximately 60km

Mode: Heavy Rail

Stations: 13 stops

This is Scenario 1 from the interim report. It connects Rolleston with Rangiora via Christchurch Central City along the existing heavy rail route.

This option includes an additional rail connection to the Central City spur from the main line.

Key Assumptions:

- Track infrastructure upgrades would be required, forming a double-tracked alignment for the length of the route;
- A 10-minute headway (for all time periods) was assumed, to provide the serviceable frequency of a rapid transit service;
- A spur from the main line through to the City Centre would be required. The central city spur would be in a tunnel under Hagley Park and a tunnel or trench to the central city terminus station;
- A new bridge of the Waimakariri River is required;
- Signalling would need to be upgraded to allow for a train every 5 minutes to ensure freight trains can continue to operate with passenger services;
- A passenger service every 10 minutes would trigger the need for grade-separation at some level rail crossings;
- An existing railing siding along the corridor could be repurposed to house the six trains required and heavy maintenance activities could be undertaken by KiwiRail at existing facilities;
- It is assumed that track widening is achievable within KiwiRail's existing designation but may require some track slewing (moving the track from the centre of the designation to the edge);
- The stop pattern is the same as the Interim Report, except for the removal of a station at Chaneys due to the low boardings at this station in earlier reporting.

12.3 OPTIONS ASSESSMENT

12.3.1 Multi Criteria Analysis

MCA was undertaken across the five options, the results of which are outlined in Table 12-5 to Table 12-7. Below provides a further summary of the results against the investment objectives and technical and feasibility criteria. For further detail on the data behind the results, refer to Appendix N – Stage 3 Short List Route Assessment and Appendix P – KPI Assessment Report.

In regards to the Stage 3 route options, the Mahaanui Kurataiao (March 2023) report sets outs the position held by manawhenua including in relation to route alignments within Waimakariri District. Of critical concern is that the establishment of an MRT route via Kaiapoi and Woodend would require road widening of the existing road corridor where the route traverses or adjoins Māori Land i.e., the existing Woodend Rangiora Road. The taking of Māori land for the purposes of creating a wider road corridor is fundamentally opposed by manawhenua. The report notes that manawhenua have not given further consideration to a preferred option for MRT to Rolleston i.e. rail vs high frequency buses vs MRT and do not hold any position or opinions on the merits or otherwise of any particular option.

Note further detail regarding some key aspects feeding into the assessment are outlined in the following subsections:

- The urban design and land use integration opportunities/constraints that fed into this assessment are outlined in Section 12.3.2.
- Cost input, both capital and operating are detailed further in Section 12.3.3
- Further specific detail regarding the value for money and constructability criteria that fed into this assessment is outlined in Section 12.3.5.

Investment Objective 1: Increased proportion of the population within key prioritised locations and along identified transport corridors within Greater Christchurch with improved access to Christchurch's Central City by 2051

Table 12-1: Stage 3 short list MCA scores - Investment Objective 1

KPI	Option				
	1a	1b	1c	2	3
KPI 1: Change in accessibility to and from the Central City ***KPI 2***: Change in access to opportunities from prioritised locations ***KPI 3***: Change in development potential	2	3	3	1	1

- Option 1b and 1c scored the highest. This reflects the high-quality public realm outcomes and area for potential comprehensive development sites proximal to the corridor. These options have the greatest opportunity to create more people-and-place focused streets within highly used corridors. These two options also capture high numbers of households and employment opportunities, as well as growth, relative to the other three options.
- Option 2 and 3 score the lowest. Both these options are considered to align with this investment objective, but they have notable drawbacks. For example, Option 2 is less aligned with urban areas and town centres given that it is a motorway focused alignment with limited opportunities for integration and connection with the wider communities. This option does not capture as many households or employments numbers and generates negligible additional household numbers able to access the central city. Option 3 (heavy rail) is similar, but integration opportunities also is constrained by the heavy rail stop locations.
- Option 1a was scored in the middle of these other four options. This is largely attributed to the lack of strategic policy alignment out to the districts (hence scoring lower than Options 1b and 1c). This is because it focuses around MRT implementation within Christchurch City, utilising existing bus enhancement networks to the districts.

One of the measures informing this assessment is the 800m household and employment values which as illustrated in the following figure shows the greatest opportunity is provided by Options 1b and 1c, followed by Option 1a and then Options 2 and 3.

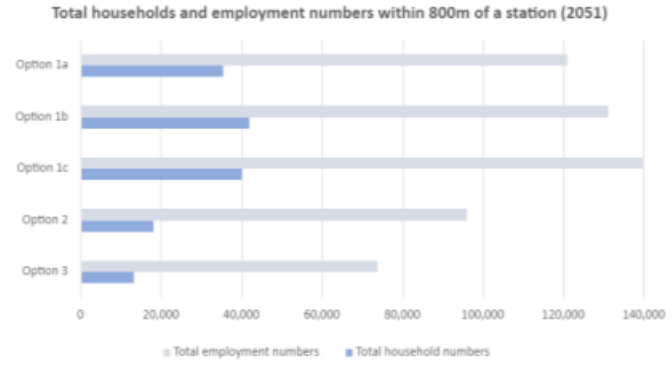


Figure 12-7: Household and Employment Measures

Investment Objective 2: Improved journey time and reliability of PT services relative to private vehicles within Greater Christchurch by 2051.

Table 12-2: Stage 3 short list MCA scores - Investment Objective 2

KPI	Option				
	1a	1b	1c	2	3
KPI 2: Change in access to opportunities from prioritised locations ***KPI 4:*** Shift in trips to public transport and active modes ***KPI 5:*** Change in journey times and reliability by public transport and private vehicles ***KPI 6:*** Ability to integrate efficiently and effectively with wider public transport	2	2	2	1	1

- Options 1a, 1b and 1c all scored the same. Across the assessment measures, there were negligible discernible impacts that offset one option from any other, so on balance the options were scored equally.
- Option 2 (along the motorway) and Option 3 (heavy rail) scored the lowest. This reflects the limitations on accessing opportunities from prioritised locations along these routes, in part due to the few numbers of stops and their more direct corridors. Also, for Option 3, within Christchurch City the journey times to/from prioritised locations are longer. For example, to/from the University of Canterbury, the required transit distance from the nearest station to the University is unfavourable.

One of the measures informing this assessment is household accessibility to Key Activity Centres (KACs). To measure this, the number of households that can access an additional KAC compared to the the do-minimum within 30minutes using PT has been measured (e.g in the base they can only access one KAC, but in the option they can now access two). The KACs are located across greater Christchurch and provide a range of employment, retail and social opportunities. Hence this measure informs wider accessibility across Greater Christchurch. As illustrated in the following figure. Options 1a, 2a and 3a provide the greatest change to this measure compared to options 2 and 3.

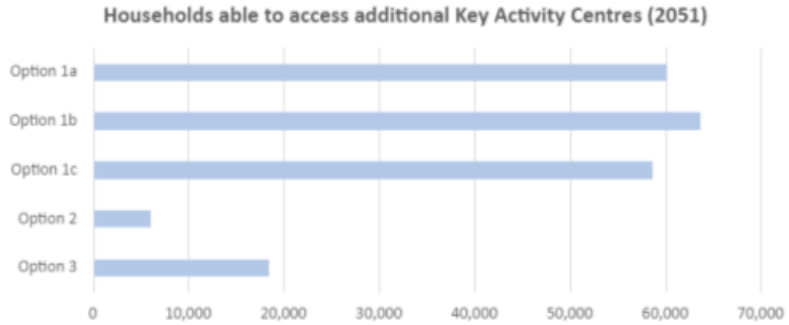


Figure 12-8: Accessibility to Key Activity Centres Measure

Daily ridership is a further measure that informs this assessment. As ilustrated below, Options 1b and 1c provide the best uptake of MRT, as a result of these options providing competative travel times, reaching the key growth areas and extending to the districts. Despite Options 2 and 3 also reaching the districts, they result in lower ridership as a result of the stations not aligning as well to the key growth areas. While Option 1a is less than 40% the length of Options 1b, it provides 60% the value of ridership.

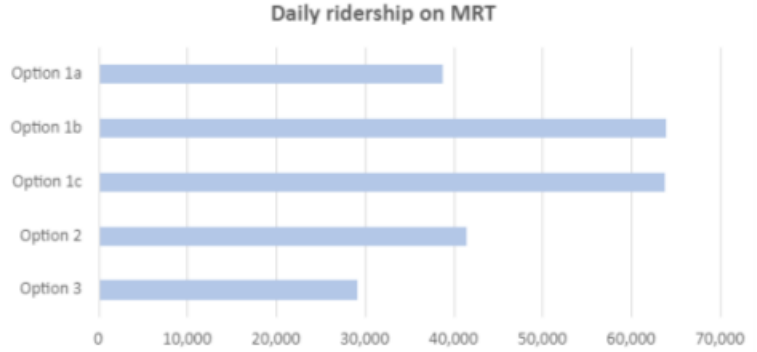


Figure 12-9: Daily Ridership on MRT from along the corridor to the city centre

Investment Objective 3: Reduce emissions from transport movements across Greater Christchurch by 2051.

Table 12-3: Stage 3 short list MCA scores - Investment Objective 3

KPI	Option				
	1a	1b	1c	2	3
KPI 7: Change in emissions from transport and improved environmental outcomes	1	3	3	2	2

- Option 1a scored the lowest. This reflects that the MRT portion of the route is only within Christchurch City, and that services to the districts are limited to enhancements of the existing bus network. Therefore, emission benefits are constrained due to a reduced extent of MRT network.
- Options 1b and 1c scored the same and were considered to have the highest emission reductions (greenhouse gas emissions, air quality and private vkt) than the remaining options, hence were scored the highest, in comparison to the other options.
- Option 2 and 3 both scored the same and were considered to be slightly more beneficial than Option 1. They have more emission reduction benefits across the three assessed measures, including greenhouse gases emissions, air quality, and private vkt changes.

One of the measures informing this assessment is greenhouse gas emissions. As illustrated in the following figure (noting the scale does not start at zero), while all options show a decrease in carbon emissions, Option 1a provides the less change from the 2051 base. As noted above this is a result of Option 1a being the shortest scheme in terms of length and it converts shorter trips to PT, compared to the other options that do reach the districts.

Note however, that embedded carbon has not been included in the assessment to date. Including embedded carbon would further support a short scheme in terms of infrastructure changes. Embedded carbon is a key component that needs to be considered in the DBC stage including the implications across modes.

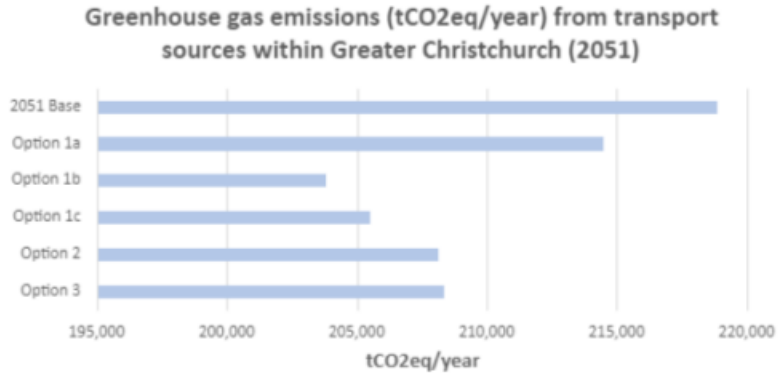


Figure 12-10: Greenhouse gas emissions (Total Carbon Equivalent)

Technical and feasibility criteria:

Table 12-4: Stage 3 short list MCA scores – technical and feasibility criteria

Description	Option				
	1a	1b	1c	2	3
Technical and feasibility criteria	-0.7	-1.7	-1.3	-1.4	-2.1

- Option 1a scored the highest against the technical and feasibility criteria. In particular, it performs strongly against cost and value for money, which reflects the fewer complexities of constraining MRT solely to the City Centre, as well as a lower investment being required.
- The remaining options scored notably worse. Of the remaining options, Option 1c scored the next highest. This has a positive BCR and also has fewer property requirements than the remaining three options, attributed to the fact that the district extensions utilise the existing heavy rail line and land acquisition requirements would be less. Option 2 did score similarly on balance across all the technical criteria, including having a similar BCR to Option 1c.
- Options 1b and 3 are the most unfavourable. This reflects the complexity of delivering these MRT options. All these options run MRT through the whole length of the corridor between Rolleston and Rangiora, which have big impacts on the operations of the wider transport network. Option 3 does



score slightly worse because of the requirements of implementing a full heavy rail route including additional operational and constructability challenges associated with the city spur extension.

Summary:

In summary, Option 2 (MRT street running limited stops along the motorway), and Option 3 (heavy rail) scored at the lower end of the range against achieving the investment objectives. Also, these options do not perform well against the technical and feasibility assessment criteria. This highlights the level of investment required and the challenges associated with implementing these two options.

Option 1b (Stage 1 MRT and Stage 2 preferred route) and Option 1c (Stage 1 MRT and heavy rail) scored the highest against achieving the three investment objectives, but still provide some challenges when considering the technical and feasibility criteria. These include:

- Option 1b has particular challenges around constructability and property requirements. This is due to the general expanse of this option and the complications of integrating MRT into an existing arterial network;
- Option 1c scores unfavourably in regard to cost and operational impacts, as a result of integrating a passenger rail service into an existing freight network.

Overall, the preferred option is **Option 1a**. It performs relatively well against the three investment objectives and significantly outweighs the remaining four options when factoring in the technical challenges with delivering MRT in Greater Christchurch. It has the highest BCR, attributed to the fact that this option focus on MRT within just Christchurch City and is therefore the lowest cost option.



Table 12-5: Investment Objectives of the Stage 3 Short List MCA Summary

PT Futures Mass Rapid Transit IBC MCA (Stage 3 Shortlist)				Do min	Shortlist Options				
					1a	1b	1c	2	3
Benefit	Investment Objective	KPI	Measure	Score	Score				
Greater public transport capacity along the transit corridor that can accommodate growth and support high density development around key nodes (33%)	1: Increased proportion of the population within key prioritised locations and along identified transport corridors within Greater Christchurch with improved access to Christchurch's Central City by 2051 (33%)	KPI 1: Change in accessibility to and from the Central City	Total households within 800 m of a station	0	2	3	3	1	1
			Total employment numbers within 800m of a station	0	2	3	3	2	1
			Households able to access the Christchurch Central City	0	1	1	1	0	2
			Change in PT Mode share to the central city	0	2	2	2	2	2
		KPI 2: Change in access to opportunities from prioritised locations	Change in households (2021- 2051)	0	3	3	3	1	1
			Change in the number of jobs (2021- 2051)	0	3	3	3	2	1
		KPI 3: Change in development potential	Enables high quality public realm outcomes (qualitative)	0	2	3	3	1	1
			Area for potential comprehensive development	0	2	3	3	1	1
			Contribution/alignment with strategic policy objectives	0	2	3	2	1	1
Investment Objective 1 (weighted scores)				0	2	3	3	1	1
Improved access to jobs, education and social opportunities (33%)	2: Improved journey time and reliability of PT services relative to private vehicles within Greater Christchurch by 2051 (33%)	KPI 2: Change in access to opportunities from prioritised locations	Number of households able to access additional KACs	0	2	2	2	1	1
			Number of households able to access 1000 additional employment opportunities	0	1	2	2	1	1
		KPI 4: Shift in trips to public transport and active modes	Proportion of trips made by PT along mass transit corridor(s)	0	2	2	1	1	1
			Change in single occupancy vehicle trips	0	2	2	2	1	1
		KPI 5: Change in journey times and reliability by PT and private vehicles	Journey time (perceived door to door) from prioritised Christchurch locations to Christchurch City	0	3	3	3	2	0
			Journey time (perceived door to door) from prioritised district locations to Christchurch City	0	1	3	1	3	2
		KPI 6: Ability to integrate efficiently and effectively with wider public transport	Daily ridership on the mass transit system	0	2	3	3	2	1
			Overall public transport mode share in Greater Christchurch	0	1	1	1	1	1
			Number of stops that integrate with PT routes	0	2	2	2	1	1
			Number of stops that integrate with major cycle ways	0	2	2	2	1	2
Investment Objective 2 (weighted scores)				0	2	2	2	1	1
Transition from single occupancy car use to lower-carbon transport options, reducing emissions (33%)	3: Reduce emissions from transport movements across Greater Christchurch by 2051 (33%)	KPI 7: Change in emissions from transport movements and improved environmental outcomes	Change in greenhouse gas emissions	0	1	3	3	2	2
			Change in air quality (PM10) and public health outcomes	0	1	3	3	2	2
			Change in private VKT per households	0	1	3	3	2	2
Investment Objective 3 (weighted scores)				0	1	3	3	2	2
Investment Objectives Sub-total (weighted)				0	1.7	2.7	2.7	1.3	1.3



Table 12-6: Technical/Feasibility Assessment of the Stage 3 MCA Summary

PT Futures Mass Rapid Transit IBC MCA (Stage 3 Shortlist)		Do minimum	Shortlist Options				
			1a	1b	1c	2	3
Technical/Feasibility Assessment		**Score**	**Score (weighted)**				
Costs	Costs of the option (Capex, Property and Opex)	0	-1	-3	-3	-2	-3
Constructability	Assessment of constructability / complexity of the option	0	-2	-3	-2	-3	-3
Operational Implications	Assessment of how well the option will integrate with the wider transport network	0	-2	-3	-3	-2	-3
Property Requirements	Scale and magnitude of the property impact along the corridor	0	-1	-2	-1	-2	-2
Value for Money	Consideration of the balance between costs and benefits, through cost–benefit analysis.	0	2	-1	1	1	-2
Consenting and Environmental Impacts	Assessment of the level of consenting complexity/difficulty and the likelihood of obtaining approvals for the proposal and qualitative assessment of key environmental risks	0	-3	-3	-3	-3	-3
Social and Community Impacts	Assessment of the impact on community access and cohesion including consideration of the number of sensitive receivers (schools / hospitals / day cares / etc.)	0	2	3	2	1	2
Technical/Feasibility Assessment Sub-Total (weighted scores)		**0**	**-0.7**	**-1.7**	**-1.3**	**-1.4**	**-2.1**

Table 12-7: Overall Scores of the Stage 3 Short List MCA Summary

PT Futures Mass Rapid Transit IBC MCA (Stage 3 Shortlist)	Do min	Shortlist Options				
		1a	1b	1c	2	3
Investment Objectives Sub-total (weighted scores)	0	1.7	2.7	2.7	1.3	1.3
Technical/Feasibility Assessment Sub-total (weighted scores)	0	-0.7	-1.7	-1.3	-1.4	-2.1
Overall score (weighted)	**0**	**0.0**	**-0.4**	**-0.1**	**-0.6**	**-1.1**



12.3.2 Urban Design and Land Use Integration assessment

The land use integration analysis of the Short List options is set out in the Urban Design and Land Use Integration Report at Appendix M – Urban Design and Land Use Integration Report with a summary of key findings set out below. As noted earlier, the same station location principles that were established for Stage 1 have been applied to the options. The motorway running stops are located in proximity to key destinations and in locations where there is opportunity for interchange facilities. However, achieving all of the Stage 1 principles is difficult given the motorway corridor is movement focused and has limited 'place' value. The Heavy Rail station locations identify opportunities for Transit-orientated development.

Street Running Option The Arterial Street Running route will:

- Deliver a high amenity outcome in comparison to the other options given its 'Place' context and overall alignment with existing centres
- Achieve a range of intensification benefits, as the corridor is aligned with travel demand and current policy direction of intensification around key centres, nodes and townships within the districts.
- Have immediate benefits as the corridor will serve a large proportion of population, align with key employment locations and main centres from day one. Given current travel demand it will assist with reducing traffic congestion.
- Within the central city the Arterial Street Running option provides the greatest level of walkable catchment coverage with five stops, serving the greatest number of city centre jobs and residents. In addition, the majority of key destinations within the central city fall within the walkable catchment.

Motorway Running Option The Motorway Running route will:

- Have limited 'Place' benefits given the extent of motorway running corridor. Currently the route results in severance between communities and therefore potentially provides a barrier to use.
- Have limited integration opportunities at stations given the motorway environment and lack of alignment with key centres and nodes. There is an opportunity at Addington to serve this city fringe neighbourhood, better integrate with Aidanfield/Wigram area and the Ngā Puna Wai Sports Hub and provide access to growth areas at the southern extent of the town.
- Include limited city shaping opportunities and is located in proximity to low density residential areas. It also has fewer stops within the central city (although this limited stop strategy could be adjusted).
- Traverses and adjoin Māori Reserve land with significant concerns identified by manawhenua (see MKT Report March 2023). Any taking of Māori land for the purposes of creating a wider road corridor is fundamentally opposed by manawhenua.

Heavy Rail Option The Heavy Rail route will:

- Include fewer stops limiting population access and demand opportunities with only one stop via a rail spur in the central city limited accessibility to key central city destinations. It will also include limited city shaping opportunities.
- Provide the greatest opportunities at Papanui and Hornby given the proximity of the existing stations to the existing commercial centres. Master planning/neighbourhood planning would be required to achieve integration between the station and centre. There is also an opportunity to extend via a spur into the Rolleston town centre.
- Provide some opportunities for Transit-orientated, brownfield development given alignment with existing industrial land use adjoining the corridor, including at Middleton.
- Result in a Riccarton station located away from the existing town centre (i.e. Deans Avenue) with a risk that this pulls development/ intensification away from the existing centre.

Summary The Street Running option will result in the greatest land use integration benefits given the following:

- It will align with travel demand, where intensification is currently occurring, is most aligned with current policy direction and broader connectivity with the wider PT network. It also aligns with the greatest number of key centres and destinations, linking people with where they want to go.
- It will deliver a high amenity outcome in comparison to the other options given its 'Place' context. It will also assist with reducing traffic congestion, as the corridor is aligned with current travel demand.

Although the Heavy Rail and Motorway running options could provide for greater Transit-orientated development opportunities (Brownfield development), the benefits of increased densities in these locations will take time to be realised.

12.3.4 Cost Assessment

A high-level cost estimate for delivery and operating phases has been prepared for each option, at comparable levels of detail. A flat rate was applied for Management Contingencies and Funding Risk Contingencies to ensure that options presenting more risk wouldn't be penalised in several criteria. The costs relative to each option (including both LRT and BRT mode for Option 1a) are outlined in the following tables and supporting figures for the delivery and operating phase, respectively.

Table 12-8: Delivery Phase Expenditure (CAPEX) for each option

Elements of Capital Costs	$m, real terms, 2023 qtr1					
	Option 1a LRT	Option 1a BRT	Option 1b	Option 1c	Option 2	Option 3
Property Costs	119.025	119.025	314.025	119.025	314.025	314.025
Managed costs and Consultancy fees	257.79	186.14	542.35	304.49	265.35	467.45
Physical Works	1690.41	1220.56	3373.57	1996.59	1565.99	3065.23
Rolling Stock	182.80	87.00	365.60	404.80	174.00	666.00
Contingency	733.68	544.01	1437.33	906.14	695.81	1353.81
Funding Risk Contingency	829.26	608.49	1650.19	1030.47	811.78	1579.45
Total	3812.97	2765.23	7683.07	4761.51	3826.95	7445.96

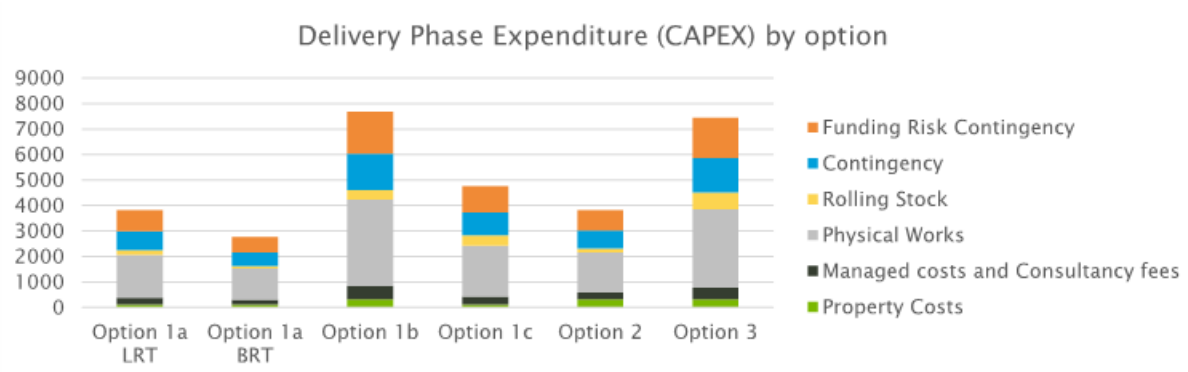


Figure 12-11: Delivery Phase Expenditure (CAPEX) for each option

Table 12-9: Operating Phase Expenditure (OPEX) for each option

Elements of Operating Costs	$m, real terms, 2023 qtr1					
	Option 1a LRT	Option 1a BRT	Option 1b	Option 1c	Option 2	Option 3
Operating Costs	9156.52	9208.35	11438.36	9908.44	11788.39	11067.76
Maintenance Costs	969.84	1093.51	2531.29	1750.57	2974.35	2342.17
Renewal Costs	1639.11	1185.18	3272.60	2249.36	1526.84	3494.43
Contingency	1846.55	1818.70	1839.82	1506.44	1744.56	1806.04
Funding Risk Contingency	676.42	634.66	1614.64	1114.55	1471.74	1563.95
Total (60 year)	14288.44	13940.41	20696.71	16529.35	19505.88	20274.35

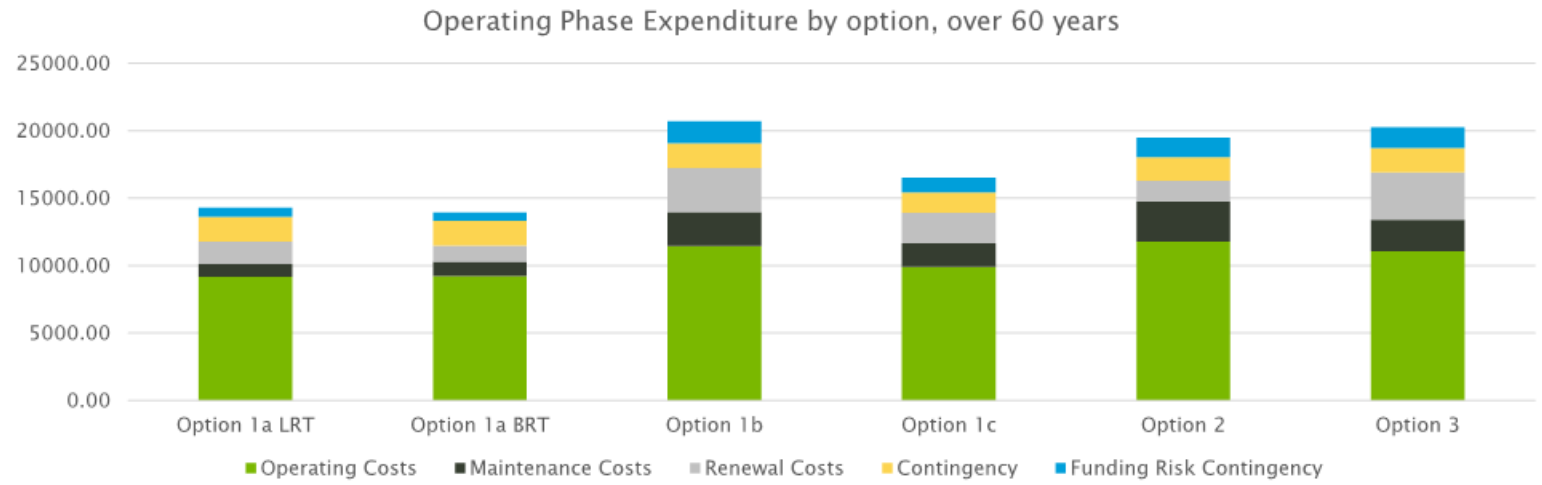


Figure 12-12: Operating Phase Expenditure (OPEX) for each option



12.3.5 Value for Money and Constructability

The value for money assessment and constructability/operational criteria were two key influencing components of the MCA assessment. The following table outlines further the assessment undertaken in regard to these two components. Further details can be found in Appendix Q – Economic Evaluation, Appendix S – Engineering Design Paper, and Appendix Y – Mass Rapid Transit Rail Options..

Table 12-10: Value for Money and Constructability Assessment

Option	Option 1a		Option 1b	Option 1c	Option 2	Option 3
Mode	LRT	BRT	LRT	LRT + Heavy Rail	BRT	Heavy Rail
BCR	1.15	1.44	0.8	1.07	1.16	0.54
Cost (PV) CAPEX+OPEX	$5,924B	$6,531B	$10,621B	$7,807B	$8,156B	$10,280B
Constructability	This option is limited to 22km of treatment, mostly within existing road corridors, albeit narrow. Its constructability is within the low range of large public transport infrastructure.		This option presents a longer route (three times that of Option 1a), including passing by significant numbers of sensitive receivers, river crossings, flood areas, and bridging.	This option has the added complexity of the interfaces between two modes. Its constructability is exposed to risks related to the current condition of the existing freight network, the number of sensitive receivers and increase in services along the rail corridor.	Option 2 includes technical challenges linked to the proximity of the motorway on a long route (60km+) including flooding plains (for example, the Cranford Basin). It scales up technical pavement requirements related to electric BRT vehicles.	This option requires significant complex design and possible construction of underground rail. The spur to the city centre in itself will impact major and critical facilities and spaces (including Hagley Park and the Hospital Precinct), which will all be disrupted and pose construction constraints. Double tracking and increased service frequencies will also be required.

12.4 OPTIONS ASSESSMENT SENSITIVITY TESTING

Following the MCA, a sensitivity test was undertaken on the five options, to determine how the scoring of the options is impacted by adjusting the weightings. Throughout the MCA process, the ILM assumed equal weightings across the investment objectives. An equal weighting was also applied to the technical and feasibility criteria. This gave an equal split of all the criteria assessed.

Four alternative weighted sensitivity scenarios were explored:

- **Sensitivity test 1**: Investment objectives focus

  Applied a 60% weighting across the three investment objectives. This reflects the situation where the focus is on alignment with the investment objectives, with less focus placed on the technical and feasibility challenges around delivering the preferred option.

- **Sensitivity test 2** Network and operational implications focus:

  Applied a 60% weighting across the network and operational technical criteria: constructability, operational implications, and property requirements. This reflects the situation where the focus is placed on the wider network and considers the resulting impacts on the network and transport operations;

- **Sensitivity test 3** Broader outcomes and environmental focus:

  Applied a 60% weighting across consentability/environmental impacts, and social/community impacts. This reflects the situation where the focus is on broader benefits for the community and environmental considerations;

- **Sensitivity test 4** Economics focus:

  Applied a 60% weighting across costs and value for money. This reflects the situation where the focus is on the economic viability, and the benefit-cost analysis of the options.

A summary of the scores for each option following the sensitivity testing, is presented in the following table

Table 12-11: Summary of the sensitivity weighted test scores

Sensitivity test	Applied weighting	Do-minimum	Option 1a	Option 1b	Option 1c	Option 2	Option 3
Base case	Equal weightings	0	0.0	-0.4	-0.1	-0.6	-1.1
Sensitivity test 1	Investment objectives: 60%	0	0.7	0.9	1.1	0.2	-0.1
Sensitivity test 2	Network and operational implications: 60%	0	-0.7	-1.4	-0.9	-1.3	-1.8
Sensitivity test 3	Broader outcomes and environmental impacts: 60%	0	-0.3	-0.2	-0.3	-0.8	-0.8
Sensitivity test 4	Economics: 60%	0	0.3	-1.2	-0.6	-0.6	-2.1

High

Low

Option 1a remains the preferred option for the majority of the sensitivity tests, with the exception of sensitivity test 1 (weighted towards the investment objectives), where it performs third best. This reflects that this option is primarily focused on MRT within the City Centre and does not fully capitalise on all benefits around extending MRT to the districts.

Option 3 remains the least preferred option regardless of the weighting applied to the criteria. This reflects the complexity and magnitude of the changes inherent within this heavy rail option. While there are several benefits, these come at a cost across a range of criteria and are not comparable with the offerings of the other options.

Option 2 is not preferred across any of the five sensitivity tests. This reflects that, similar to Option 3, while there are several benefits of implementing street running MRT throughout Greater Christchurch, there are technical challenges with implementing this option and at a moderate cost.

Option 1b and Option 1c perform well when the investment objectives are heavily weighted. This is because these options reach larger areas of intensification opportunity. However, when the operational and economic factors are considered for these options, the scores of these options drop. This reflects the challenges of integrating MRT and heavy rail with the wider transport (including rail) network, which also comes at a higher cost.

In summary, the sensitivity tests reinforce that Option 1a is the preferred way forward, given the robustness of this option across alternative weighting scenarios.


PREFERRED OPTIONS
WSP | Aurecon | Boffa Miskell |QTP

13 PREFERRED OPTION ASSESSMENT

13.1 PREFERRED OPTION SUMMARY

Option 1A is the preferred MRT option, as summarised in Figure 13-1.

The route is approximately 22km in length, connecting Hornby to Belfast via the city centre. It includes 21 stop locations and could be developed as a BRT or LRT mode.

Direct bus services proposed under PT Futures Combined Business Case are utilised to connect to Waimakariri and Selwyn Districts. Opportunities to enhance these services along side Park and Ride provisions are outlined further in Section 0.

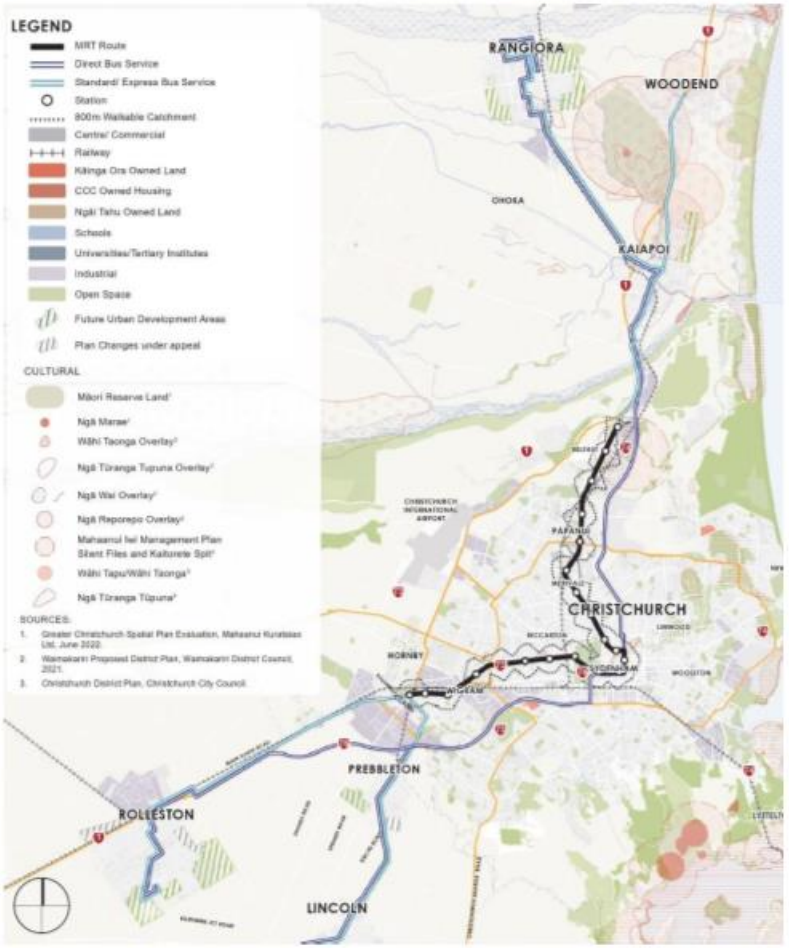


Figure 13-1: Preferred Option

13.2 PREFERRED OPTION DESCRIPTION

13.2.1 Route Description

The overall preferred route and context is presented in Figure 13-2.

North Corridor: The route follows Papanui Road and Main North Road, supporting the urban centres of Merivale, Papanui, Northwood and Belfast along this corridor. There is an opportunity for a high place value corridor with the Christchurch Northern Corridor being the vehicle and freight priority corridor. The corridor:

- Aligns well with key activity centres and town centres.
- Includes a number of significant schools in the walk up catchment.
- Includes opportunities for transit malls at key centres.
- Includes opportunity for intensification along the route.
- Aligns with pockets of Kainga Ora ownership with the potential to unlock development opportunities.
- Could utilise the existing overbridge structure to cross the railway line.

City Centre: The route follows Victoria, Kilmore, Manchester and Tuam Streets along with Riccarton Avenue through Hagley Park. The corridor:- Provides good accessibility to all key city centre destinations, including the Canterbury Multi-use Arena, Ara Campus, East Frame residential area and future mixed-use developments to the east and south. The corridor:

- Uses Manchester Street, which leaves Colombo Street to become the spine of a pedestrianised core.
- Aligns with Manchester Street which is an exciting public transport
- corridor with PT as an identified function for this corridor.
- Provides transfer legibility at both the Manchester and Hospital 'Super Stops' and the Bus Exchange.
- Will enable PT only opportunities to exist along Manchester and Tuam Streets.

Southwest Corridor: The route follows Riccarton Road and Main South Road to Hornby. The corridor:

- Aligns with Riccarton and Hornby emerging metropolitan centres as well as Church Corner Town Centre.
- Takes the shortest length in connecting Hornby and Riccarton.
- Provides an opportunity for a transit mall at Riccarton.
- Enables multi-modal transfer connection to the airport.
- Includes a high portion of residential catchment within corridor.
- Aligns with several Kainga Ora ownership parcels with the potential to unlock development potential.
- Is already has high bus patronage along corridor (strong existing market).

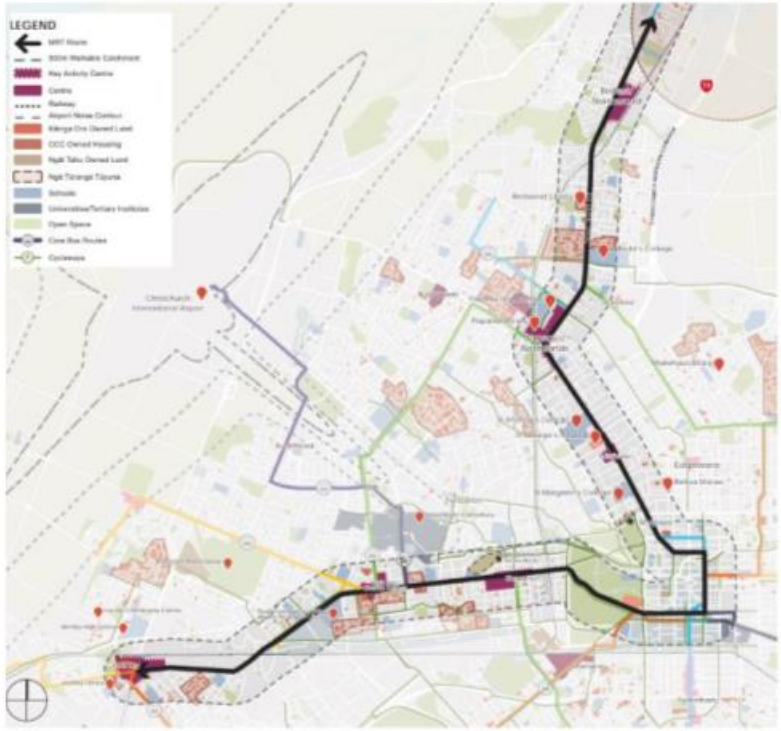


Figure 13-2: Preferred Option route Description

13.2.2 Station Location and Hierarchy

Station Hierarchy

Locating stations and stops at key town centres along the corridor will provide an opportunity to strengthen their role and function as primary destinations within the City and Sub-region.

The station hierarchies will align with the existing future role and function of key centres and areas of intensification identified by the Christchurch City Council through proposed Plan Change 14. They will also support the development of a legible urban form as the city continues to grow.

Introduction of MRT will enable a longer term focus for the centres with a shift towards growth in the scale of the centres in line with the NPS UD objectives. There will also be a greater focus on a mix of land use activities, with opportunities to develop currently retail orientated areas as a hub for a range of community, business, and retail activities. Along with growth and regeneration opportunities at key centres, there is the opportunity to integrate residential in the form of multi-storey townhouses and apartments of different scales.

Intensification both along the corridor and at key station/stop locations will be necessary to supporting mode shift and also help leverage the benefits of high frequency public transport. It will provide the opportunity to unlock development potential and promote exemplar developments and change in typologies to support mixed use developments. This could include transit-orientated development (TOD) projects.



Figure 13-3: Urban Built Form - Scale of Centres

Station Locations

The station and land use integration response aims to support a legible hierarchy of urban centres with different land use responses around MRT depending on the urban environment and context. These are described further as follows and presented in Figure 13-4.

CITY CENTRE STATIONS (Victoria Street, Town Hall, Manchester Street*, Bus Interchange, Hospital) - These stations have the highest demand as they interchange with the Bus Exchange/ PT network. These stations serve the highest density urban neighbourhoods and act as a gateway to the amenities within the city. The design of these stations should be reflective of the quality of existing public realm.

- Reduction in medium density typologies being built within the city centre (Four Avenues) superseded by high density typologies of 10+ storeys.
- Improved public realm amenity to support a well-functioning urban environment.

TOWN CENTRE STATIONS (Papanui, Riccarton, Hornby) - These stations serve the high density neighbourhoods and intersect existing frequent bus routes and cycle corridors. Town centres are nodes for employment, education and amenity, MRT stations in these locations unlock the potential for intensification.

- Reduction in medium density typologies being built superseded by quality high density typologies of at least 6 storeys with a wider medium density catchment.
- Opportunity for an increase of community urban amenity, mixed-use developments adding to Town Centre character.

CENTRE OR INTERCHANGE STATION (Northwood, Merivale*, Hagley Park, Church) - These stations serve a more compact high density neighbourhood, intersect existing frequent or local bus routes and cycle corridors. Centres provide local amenity, nodes for employment, education and amenity. MRT stations in these locations unlock the potential for intensification.

- Mixed-use typologies, with ground floors comprising of commercial, office and retail with residential above, supporting all day MRT ride ship within the immediate walkable catchment.
- Reduction in medium density terraced typologies being built superseded by quality low rise apartment typologies up to 6 storeys with a wider medium density catchment.
- Opportunity to achieve local urban amenity and for transport integration with active mode feeders for first/last mile links and other local connections.
- Opportunity for the Deans Ave stop to be shifted to align with interregional rail in the future.

NEIGHBOURHOOD STATIONS (Corner Dickeys Road, Belfast, Prestons Road, Northcote Road, Tomes Road, Clyde Road, Upper Riccarton, Springs Road, Neill Street) - These stations should be aligned with neighbourhood amenities and services such as local shops, medical centres, parks and schools.

- Primarily residential development with opportunities for high-medium densities at areas of high demand, such as Clyde Road which serves the University.
- Transition to lower densities at the edge of the catchment.



Figure 13-4: Locations and Hierarchy of the 21 stops in the preferred option

Detailed Station Analysis

More detailed station analysis both in terms of location and first and last mile changes will be considered at the DBC stage. There are two station environments that will need particular resolution, being the Bus Interchange within the central city and Hornby. The key issues associated with these locations is set out in more detail below.

Bus Interchange Station:

The station stop location associated with Christchurch central city bus interchange, presents a number of integration challenges. The streets adjoining the Bus Exchange are constrained by the width of the corridor, impacts on the wider PT Network access to the Bus Exchange, impact on active modes and location of existing buildings which create pinch points.

- Optimising this stop location will require consideration of:
- How to achieve a space in the street which is dedicated to public transport, people on foot and public space.
- Restricting private vehicle access and/or highly controlled to enable pedestrian priority and public realm spaces.
- How to achieve a high quality, user focused interchange environment.

Stop location opportunities have been explored at a high level as outlined in Figure 13-5. However, further work beyond this IBC will be required to confirm the details of the route and stops at this location.

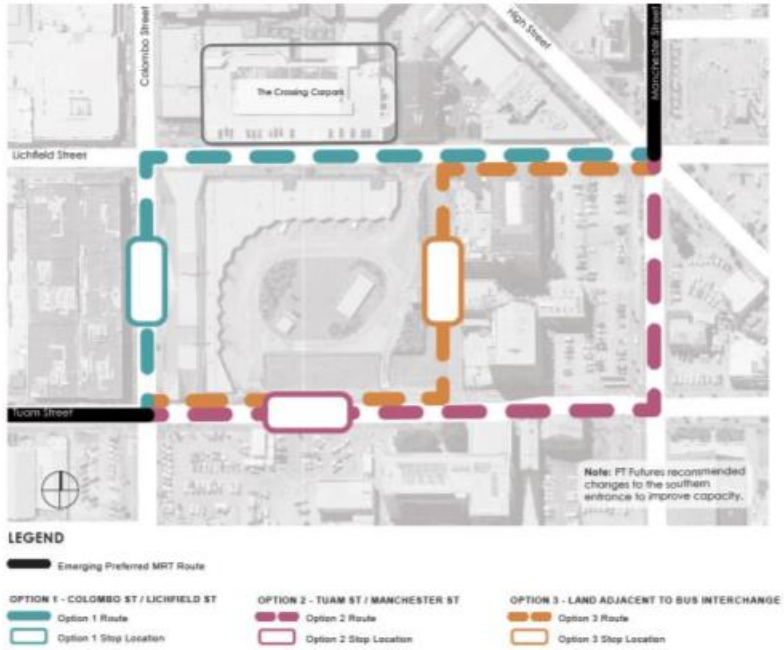


Figure 13-5: Station and route options at the Bus Interchange

Hornby Station

Hornby Town Centre and associated station stop also presents a range of challenges when considering how MRT would align with the centre. MRT has the potential to be a catalyst within the Town Centre, but further investigations will be necessary beyond this IBC to set the scene for MRT.

The key challenges include:

- The centre is dominated by movement (cars, trucks and trains).
- Both SH1 and the railway lines result in severance of the Town Centre. Future MRT would require grade separation with the existing rail corridors.
- The Centre includes industrial areas that require freight access.
- These factors inhibits 'place' outcomes to support MRT and land use integration.

To maximise MRT opportunities within the Town Centre, changes to the movement hierarchy within the area will be required. These include potential changes to the ONF classification for the Main South Road. It is recommended that a master planning exercise is undertaken for Hornby to establish a future vision and address the broad range of changes facing the centre. The completion of this framework would be necessary prior to MRT extending to Hornby.

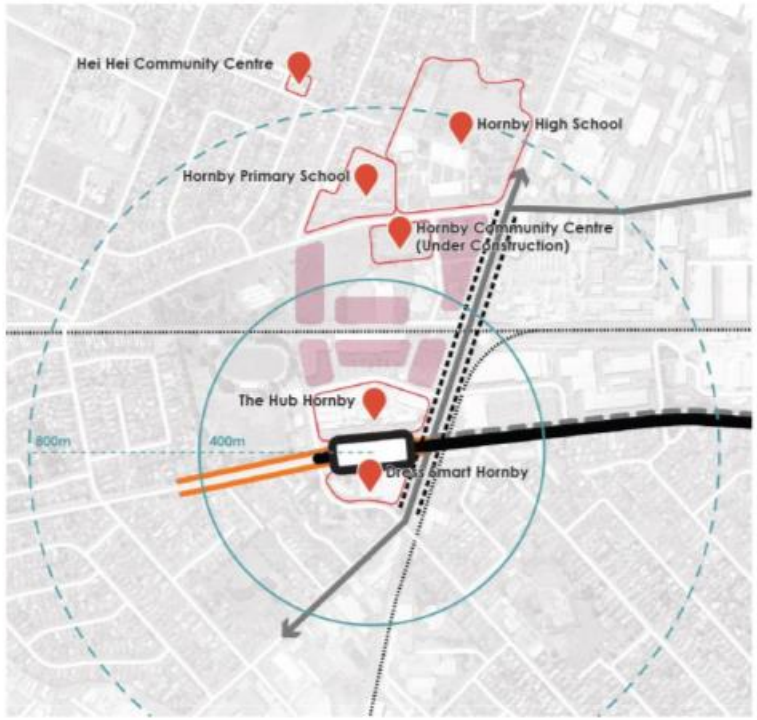


Figure 13-6: Main South Road Stop Alignment

13.2.3 Mode

Light Rail and Bi-articulated Bus are the preferred mode technology for the preferred street running option. The following table outlines the trade-offs that need to be considered in stages beyond this IBC to inform the final mode selection.

Table 13-1 Light Rail and Bi-articulated Bus trade-offs

Trade-off	Light Rail	Bi-articulated Bus
Capacity	A light rail would require a vehicle every 6-5 minutes to meet demand. The demand analysis shows that by 2051 the demand has reach 46% of the maximum capacity. However, light rail units can be coupled together to double the capacity of the vehicle. Light rail technology has to ability to support the corridor well into the future. However, it is uncertain if the headroom is required.	The 2051 forecasts estimate a bi-articulated bus would be required every 4 – 5 minutes to meet demand. The analysis shows that by 2051 the demand has reached 54% of the maximum capacity, assuming that anything more than 3 minutes would be unreliable.
Resilience And Development	Rail infrastructure is seen as permanent, hence this gives investors higher confidence in investing along the corridor due to high cost to relocate or revoke this infrastructure. This is seen in the literature review in this report, with Light Rail seeing an average 15% land value uplift in our case study review. However, the fixed route results in lower resilience as that track can be damaged in a natural disaster and needs to be repair before operations can resume.	Bi-articulated bus infrastructure, while a high investment, can be seen as flexible due to the rubber tyres allowing this technology to operate on other roads. This gives investors lower confidence as the technology can be redirected to other corridors with ease. The case study review highlights that BRT sees an average 8% land value uplift. Yet, the flexible of the technology allows for the service to be resilient to natural disasters and other events that may disrupt movement on the preferred corridor.
Value for Money	This IBC will undertake a value for money analysis to understand the benefits justifies the varying costs for these two modes. However, the DBC should focus on the two technologies ability to dictate the desired land use and in turn different benefit profiles. The two options will also have varying operational costs through time as demand grows and the technologies begin to vary. For this IBC the desired headway has been assumed at 5 minutes, which means the same number of vehicles is required at this time. However, Light Rail will have operation cost savings as demand grows. Further analysis is required to understand if the long-term lower operation cost or high benefits justifies the higher capital expenditure.	
Risks and Complexity	Depot: The distance of the depot to the route needs to be minimised to avoid additional infrastructure being laid. The depot is highly specialised (tracks) and estimated to require a land area of 27,700 m2. Depot requirements complicate phasing opportunities as securing adequate land closer to the city centre may prove complicated. Light Rail is also highly likely to require the grade separation from the current heavy rail corridor at the Riccarton Road level crossing.	Depot: The distance of the depot to the route will impact on the dead-running of a service and the operational cost but will not trigger the need to additional track infrastructure for the fleet to access the depot. The depot, requiring less specific structures and equipment, is estimated to require a land area of only 9,600 m2 as the flexibility of a BRT fleet to be parked on non-specific stabling facilities means that existing depots and parking can be used. There is an opportunity for technology to use the existing depot sites around Greater Christchurch.

13.2.4 Cross Sections

The preferred route corridor is further illustrated by way of cross sections and in context to the One Network Framework (ONF), for each section of the proposed MRT corridor.

The One Network Framework (ONF) is a useful tool that recognises the Movement and Place functions, as well as the surrounding context of the street. Christchurch City Council provided draft ONF information and the Centres Hierarchy approach which helped inform the corridor classification. The One Network Family categories have been applied to the preferred MRT corridor based on adjacent land use and the movement function of the corridor.

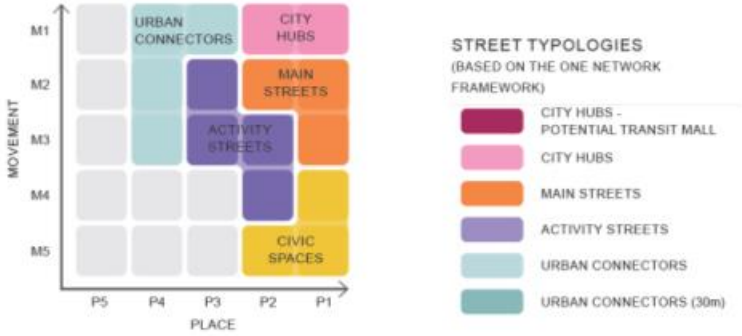


Figure 13-7: One Network Framework Street Typologies

In terms of cross sections, the preferred route corridor ranges in width. Dedicated space for MRT has been proposed along the length of the corridor to meet the project Investment Objectives. However, many of the existing streets are 20m in width, making it challenging to provide dedicated space for each user within the existing road reserve.

In some instances the corridor will need to be widened, albeit wholesale road widening is not assumed. Given the city shaping nature of the project consideration is being given to targeted strategic land purchase along the 20m corridors in particular in supporting the intensification anticipated and in achieving a quality public realm outcome. Opportunities for localised and 'place based' amenity enhancements will be investigated further at the next stage of the business case.

In some instances, the introduction of 'Transit Malls' is being considered at key centres. Transit malls prioritise people, street-trading retail and hospitality, active modes, high quality public space and green infrastructure by removing private vehicle travel. This type of street environment is expected to catalyse well designed mixed use typologies and play an important civic space function for the community. The alternative is potentially compromising on the dedicated priority of people, the public realm or MRT. If a wider corridor is the preference consideration may be given to purchasing land (although the assumption of the Business Case is to investigate MRT within the existing corridor). In some instances, grade separation could be an option. 'Transit Malls' are discussed in more detail later in this Report.

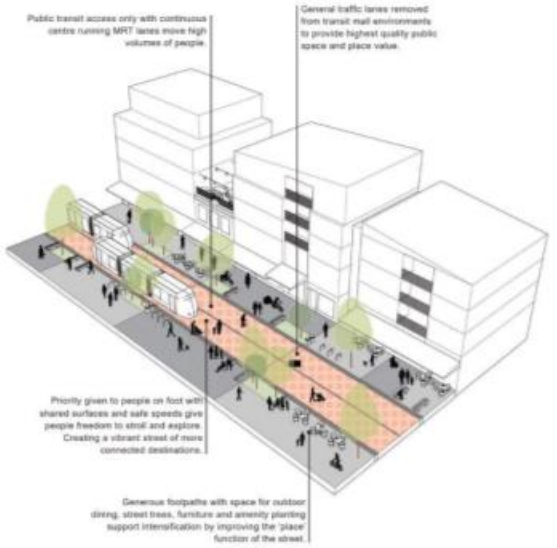


Figure 13-8: Transit Mall Concept

The cross sections indicate the proposed spatial allocation of road space within the existing corridor dimensions. Some street categories have the same spatial allocation given constrained widths. The street design will be explored, collaboratively with partners and key stakeholders in subsequent stages of this IBC to optimise space allocation between users and achieve higher place value. This will include consideration of strategic land purchase to support quality outcomes



Figure 13-9: One Network Framework analysis for the northern corridor



Figure 13-10: One Network Framework analysis for the central city corridor

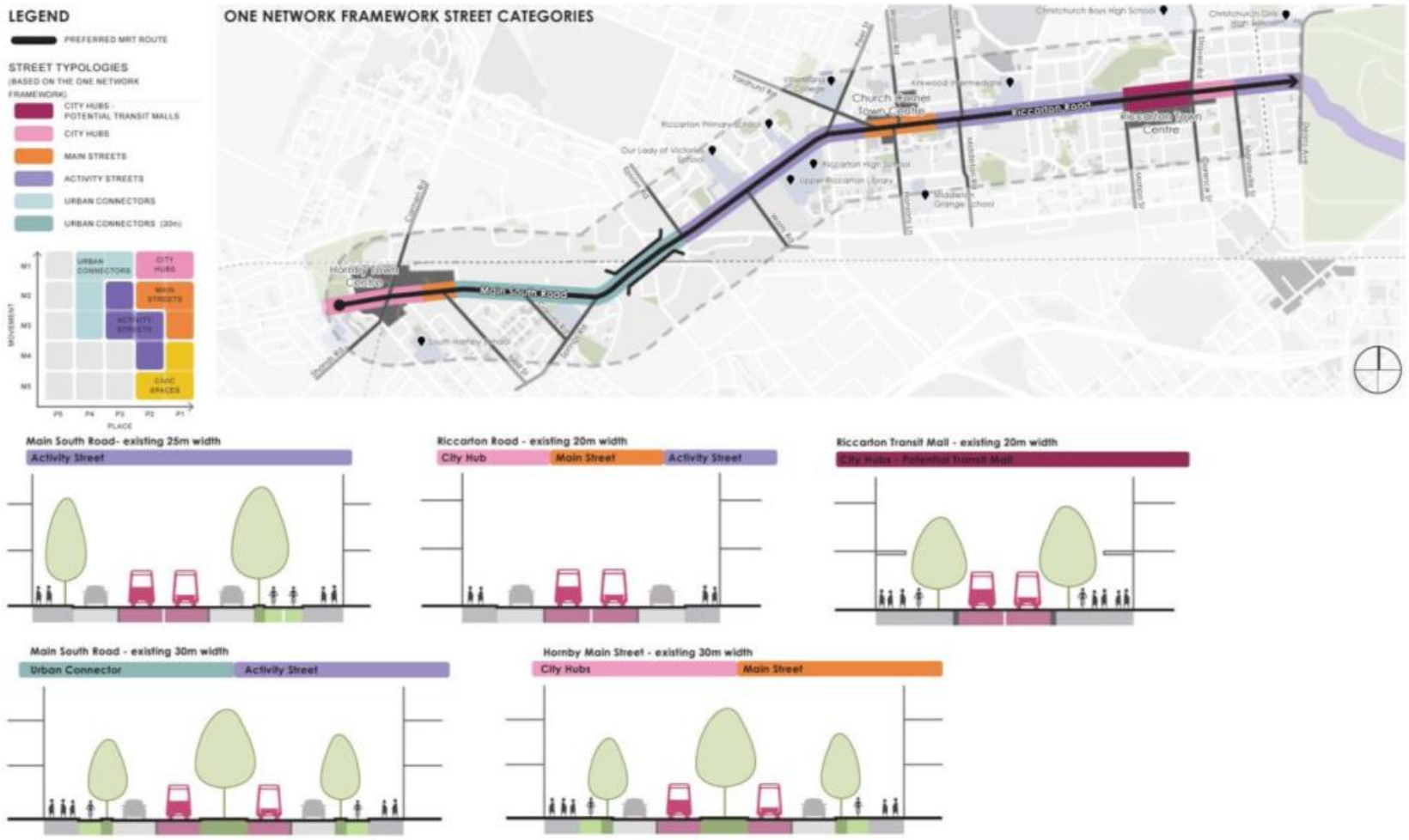


Figure 13-11: One Network Framework for the southwest corridor

13.2.5 Public Transport and Cycle Network Integration

PT Network Integration

The alignment of stations and stops will facilitate integration with the wider public transport network.

For the purposes of assessing the preferred option, various PT network integration assumptions were made. More information can be found in the Appendix L – Public Transport Network Integration, but at a high level the PT route adjustment philosophy includes:

- All routes except the Orbiter are to be removed from the MRT corridor.
- Key interchange locations with the rest of the public transport network are likely at the following:
  - Central Bus Exchange
  - Riccarton
  - Hornby
  - Papanui
  - Belfast (Waimakariri Services)

Note however, that while these assumptions were reasonable to inform the assessment further investigation and engagement with stakeholders, particularly Ecan will be required to ensure optimisation of MRT with the PT network.

Cycle Network Integration

Supporting facilities at stations and stops including transfer opportunities and cycle storage will encourage seamless connections helping improve accessibility for the wider community.

The preferred option will also need to be integrated with the wider cycle network. The MRT route does not conflict with the Major Cycleway Network, (shown by the green hashed line) but there are some crossing points where infrastructure conflicts and priorities will need to be managed. Note there is also a wider network of cycle provision beyond the Major Cycleway Network.

As presented in the Section 13.2.4, there are cross section constraints along narrow sections of the corridor. A key consideration moving into stages beyond this IBC will be how people on bikes are catered for through the corridor, taking into account the wider mode priority and network functions.

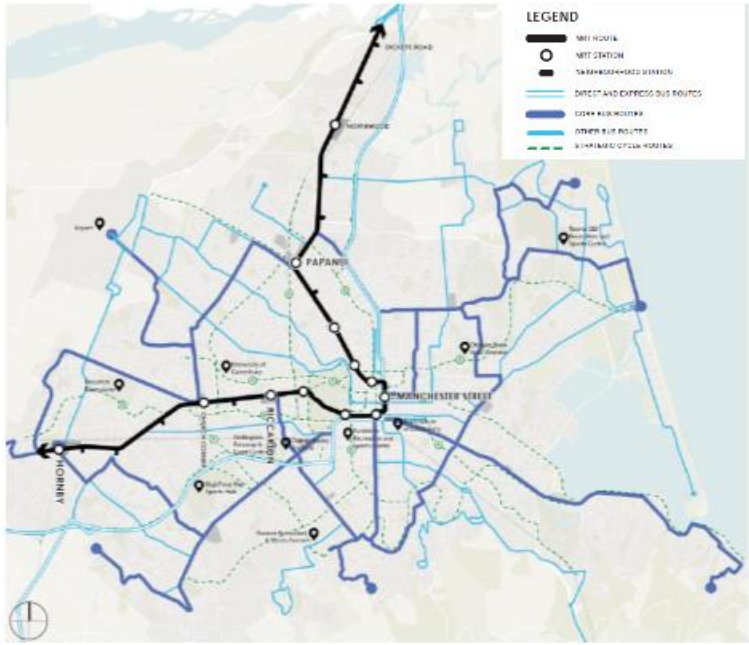


Figure 13-12: Integration with the PT and Cycle Network

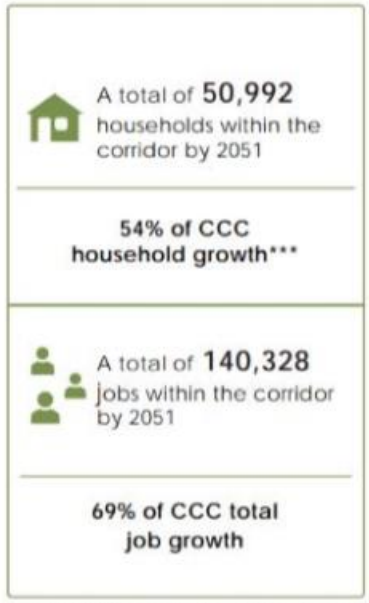
13.2.6 Urban Outcomes

The land use scenario proposed for the preferred option seeks to establish a realistic growth scenario in alignment with GCSP and in response to MRT.

As such, Scenario 3 adopts a 'relative' growth approach at key station. It applies a staged approach to growth that seeks to 'move the dial' towards a desired urban form and densities to support MRT. It is important to reiterate this is just a scenario and also that the densities outlined are still well below the ideal levels that are recommended around stations/stop. Intensification around MRT is a priority. Greater densities in the right locations and well-integrated with the transport network helps to support MRT patronage and active mode travel along with wider health and sustainability benefits as part of a well-functioning urban environment.

Scenario 3 comprises:

- Priority growth areas and targeted intensification around key centres along the route. These centres also enable opportunities to link other key 'activity generators' and the wider PT network.
- The GCSP 'Compact' land use, which increases population and employment within Christchurch City (with corresponding reduction within Selwyn and Waimakariri Districts), with further modification made to allocate more of the Christchurch City growth to the MRT corridor. This shift in growth initially through targeted intensification reflects the opportunity to align MRT with corridors that comprise a range of key destinations, the greatest densities and the greatest travel demands.
- A focus on jobs and households into key centres including the central city in reinforcing their role and functions and the overall urban form of the city.
- A shift in focus away from the Neighbourhood Stations in the short term in order to support the Centres hierarchy.



***CCC 40,404 growth share within Greater Christchurch. Similar to the share agreed in the Compact growth scenario.

Figure 13-13: Land use Scenario 3



Figure 13-14: Spatial Summary of Land Use Scenario 3 outcomes

The outcomes of Land Use Scenario 3 spatially, and changes that could potentially be undertaken to the District Plan zoning to assist with achieving the above outcomes and mixed use typologies, is further illustrated in Figure 13-15.

It outlines:

- Commercial Centres around stations identified potentially as mixed use areas. A greater focus on mixed use typologies comprising vertical stacking of land uses will be key in achieving greater activation of the public realm and vitality of key centres. This could be achieved through changes to the existing Commercial Zones or introduction of a more targeted Mixed Use zoning.
- Potential rezoning of some Industrial and Residential zoned land to Mixed Use.
- Tightening of the High Density Residential zone in Papanui to support a more legible urban form.
- Removal of the High Density Residential zone at Tomes Road.
- Simplification of the City Centre Mixed Use zones.
- Potential rezoning of the residential area between Victoria Street, Bealey Ave and Manchester Street to a Mixed Use zone to encourage more missed use typologies. Examples of land use integration opportunities within different centres along the route to support MRT are explored in more detail in the following section.

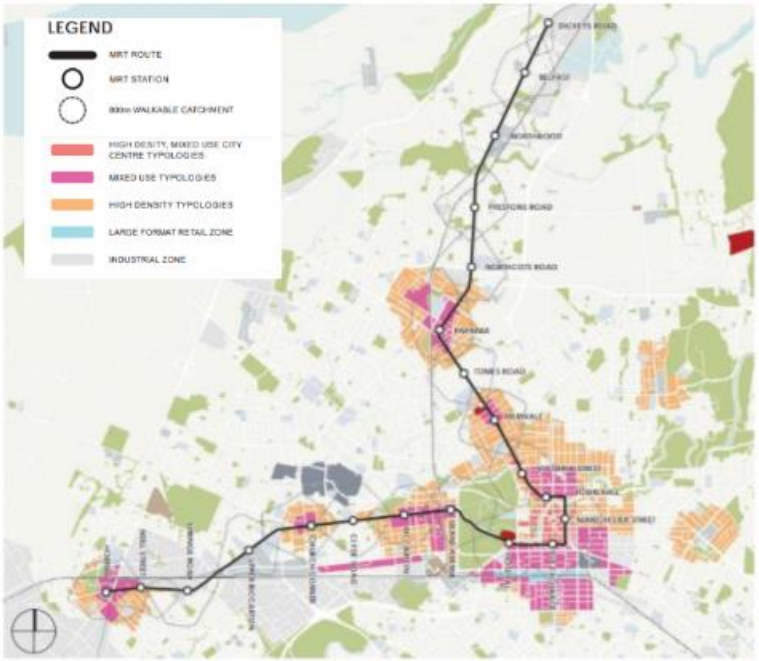


Figure 13-15: Land Use Scenario 3

13.2.7 Services to the Districts

The recommended option proposes strengthening connectivity with the districts, including enhancing local Park and Ride to ensure they are correctly scaled, configured and spatially positioned to work effectively alongside MRT. This is in conjunction with additional direct bus services (proposed through PTFutures) and the standard connecting bus services, including express services, which will require optimisation to ensure efficient connectiveness from the districts, direct to the Central City and also the MRT system. The bus services available are further defined below::

- Direct Bus Services: These travel non-stop between the Districts and the city, with the route travelled depending on traffic conditions.
- Standard and Express Bus Services: These operate within the District and connect the Districts to the city via fixed routes and stop at each pickup/drop-off location. As part of this service Express Buses are provided typically in the peak morning and evening hour, where by they only pickup and drop off at limited stops.

Direct Bus Service Offering:

The preferred route corridor proposes enhanced Direct Bus Services to connect Waimakariri and Selwyn Districts. The Direct Bus Services travel non-stop between the districts and the city, with the route travelled depending on traffic conditions. Frequency improvements to the Direct Bus Services are already proposed under the PT Futures Combined Business Case and hence provided for in the do-minimum base case for MRT. However, the intention is that these services are further enhanced to ensure these services provide a user experience equivalent to an MRT system.

PT Futures considered all day frequency improvements across the Direct Bus Services with 15 minute peak and 30 minute off-peak services, as outlined further in Table 13-2.

However, PT Futures had a study horizon through to 2038, hence, there is a risk that the proposed services are not sufficient to meet demand through to 2051, Of particular note is Rolleston, which is forecast to have the greatest PT demand to the central city from across the districts.

In the next stages of work, beyond this IBC, a service plan should be reviewed to consider if higher frequencies and or higher capacity vehicles would be required beyond the ten year horizon considered under PT Futures.

Table 13-2 Frequency of the Direct Bus Services

Service	Current	PT Futures
Rangiora – City	AM peak hr 30min freq PM peak hr 30min freq	AM and PM peak 15min freq IP 30min freq
Kaiapoi - City	AM peak hr 30min freq PM peak hr 30min freq	
Rolleston - City	AM peak hr 30min freq PM peak hr 30min freq	AM and PM peak 15min freq IP 30min freq
Lincoln - City	AM peak hr 30min freq PM peak hr 60min freq	AM and PM peak 15min freq IP 30min freq

Standard and Express Bus Service Offering:

Standard bus services connect between the districts and the city, which take fixed routes and pickup/dropoff at each stop location. During peak periods these standard bus services also offer an Express Service which follow the fixed routes but reduce the number of pickup and drop off points. The intension under MRT is that these routes (standard bus services including express services) connect into the MRT terminus with smooth transfer onto the MRT system. In line with the proposed phasing approach of MRT, these transfer points will initially be to Church Corner and Papanui and then ultimately Hornby and Belfast.

Beyond this IBC, consideration of bus service interconnectivity within the districts, including any proposals under PTFutures, should also be reviewed and optimised in the context of the MRT offering, to ensure suitable internal district connectivity (Intra-district) and connectivity to MRT.

Infrastructure: The direct bus services are flexible in their routing; hence the drivers can deviate their route in response to any traffic conditions. However, they are understood to generally follow the route below: Waimakariri Direct Services via SH1 – SH74 - Cranford Street Selwyn Direct Services via SH75/Brougham Street – Selwyn St. The Waimakariri route has as a number of priority provisions (including T2 lanes on SH74) as part the Christchurch Northern Corridor (CNC) improvements and Downstream Effect management Plan (DEMP). The Selwyn route has not been prioritised for public transport, but NZUP SH75 Brougham Street Pre-Imp is currently in progress and hence any future bus priority measures should be coordinated with that programme of

works. In the next stages of work, beyond this IBC, a further review of bus priority provisions and constraints specific to the direct bus services should be undertaken. This should confirm where, if any, future bus priority measures are needed to ensure ongoing reliability for direct bus services into the future.

Park and Ride Facilities: Park and Ride facilities are currently provided and those proposed in PT Futures are outlined below and shown in Table 13-3:

Table 13-3: Park and ride locations proposed in WDC and SDC

Location	Current	PT Futures
Rangiora	Rangiora Southern (South Belt); Rangiora Central Park and Ride (White St); and Rangiora (River Road)	New shelters and Real Time Information Displays
Kaiapoi	Kaiapoi South (Wrights Road and Main North Road); and Kaiapoi Central (behind New World)	New shelters and Real Time Information Displays
Rolleston	Foster Park Rolleston Council	Relocate Rolleston Council P&R to a permanent site; and Formalise Foster P&R
Lincoln		Lincoln Events Centre, including new shelter and Real Time Information

The proposed PTFutures park and ride sites offer a good basis from which to connect the district services.

In addition to district park and rides, the preferred MRT also assumes a park and ride at the Belfast terminus station and one to be investigated near Hornby. (Noting Hornby is more constrained and hence identification of a suitable park and ride location would need further investigation). Given the extent of park and rides proposed, ratification of these should be considered beyond this IBC to ensure they are still optimal in context of MRT and the GCSP.

To align the park and ride services closer with an MRT type offering, further enhanced investment is proposed across all the Park and Ride sites. Moving beyond this IBC, consideration should also be given to referencing these as 'Multimodal Interchanges' to reflect the wider function these sites offer, in connecting transfer facilities to PT and MRT from a variety of modes including cars, bikes and scooters.



Figure 13-16: Park 'n' ride locations proposed in WDC and SDC

Park and Rides will play a critical role in linking the Districts' with MRT, therefore, experience and quality will be a part of future improvements. A greater level of facilities would be expected at a park and rides associated with MRT, including, real time information, public bathrooms, safe and legible stations, active mode parking and active mode network integration. Examples of high-quality park and ride sites are illustrated in Figure 13-17.



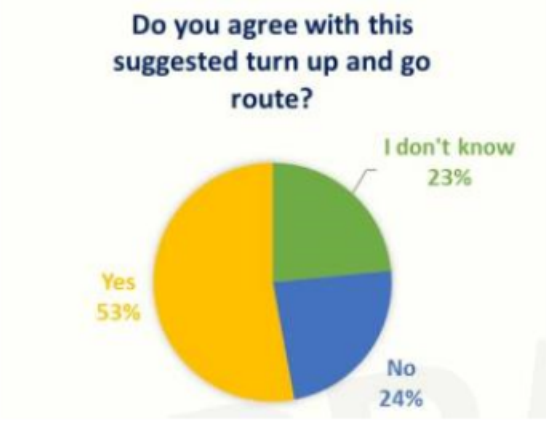
Figure 13-17: Brisbane Park and Ride environment and Albany busway park and ride with green amenity, a covered, legible walkway and lighting.

13.3 EARLY COMMUNITY ENGAGEMENT RESULTS

In February and March the Urban Growth Partnership for Greater Christchurch went to the community to seek their feedback on the future growth and the proposed MRT service investigations. A key objective of the engagement was to raise awareness of the 'turn up and go' MRT route and potential investment along with seeking community input on the work undertaken to date. Key feedback received relevant to MRT is outlined below.

Support for the suggested MRT route:

- Overall, 53% of people agree with the proposed MRT route
- Those who lived in the suburbs along the route were mostly supportive at 75%.
- Those who lived in the districts were least supportive.
- For those not supportive of the route, the most common reasons was that it didn't go to Rolleston or Rangiora and to a lesser extent, eastern Christchurch or Sumner and also there was a preference for a heavy rail corridor.



Space allocation in street:

- Along the route 37% would like to see cycleways, with 25% outdoor dining and street furniture, with 30% car lanes and 8% parking with limited pedestrian space.
- Younger respondents and those who lived in the suburbs on the 'turn up and go' route had a notable preference for 'cycleways' and 'outdoor dining' over other road users.

The Huihui Mai Community Engagement Report 2023 is included on the Greater Christchurch Partnership Website at: https://greaterchristchurch.org.nz/urbangrowthprogramme/huihui-mai

13.4 ASSUMPTIONS AND DEPENDENCIES

13.4.1 Key Assumptions

There are several assumptions that underpin the preferred route assessment and should be taken into consideration for future investigations beyond this IBC.

- **Intensification**: Intensification around stations is fundamental to MRT's success. Intensification opportunity has been measured against strategic and policy direction and urban design best practice. Different development typologies were identified for the motorway and heavy rail options given the options are aligned with industrial land versus brownfield infill opportunities for the street running options.

  This land use scenario assumed in the analysis (Land Use Scenario 3) aligns with the current direction from the GCSP at the time of writing, but may need adjusting in stages beyond the IBC, depending on the outcome of the GCSP. Further analysis as to the future densities around centres and stations is referred to in Appendix M – Urban Design and Land Use Integration Report.

- **Property:** It has been assumed that large-scale corridor widening will not be necessary. If this assumption does not hold then there are potential implications on the design philosophy, in particular the typical cross sections..

In addition, there may be strategic land acquisitions required to deliver the project outcomes near stations and major intersections; Given the city shaping nature of this project consideration should be given to targeted strategic land purchases to support the intensification anticipated (including change in

housing typologies), the change in the character of the corridor, and in achieving quality streetscape/public realm and specific 'place' outcomes.

- **Public transport (PT) integration**: It was assumed that any existing bus services will be modified to support / integrate with MRT but not compete with it. The PT network integration assumptions are further outlined in Section 13.2.5 and Appendix L – Public Transport Network Integration. If this assumption doesn't hold then there are potential implications on the design philosophy, in particular the station layout/footprint.
- **Service Frequency:** Headway of 5 minutes during morning and evening peak periods and 10 minutes at other times. The direct bus services have a headway of 15-20 minutes as recommended in PT Futures
- **Heavy Rail Network Integration**: Under an LRT mode scenario. Mode separation of LRT and heavy rail is required at any interface points;
- **Park and Ride: Park** and ride locations in the districts has been assumed as outlined in PT Futures. In addition, for the preferred option assessment, park and ride was also provided for at Belfast. A further park and ride could also be established at Hornby, but space to provide for this and how it connects/influences the proposed Hornby stop location would need further investigation.
- **Mode**: Assumed mode is bus rapid transit (BRT) or light rail transit (LRT) as outlined further in Section 0 and Appendix I – Mode Assessment Paper. The space requirements for both modes is assumed to be compatible and hence the same design envelope (7 m width) for has been assumed for both.
- **Modelling:** Modelling assumptions informing the analysis are outlined in Appendix T – Stage 1 - Transport Modelling Technical Note. However, of particular note is that the same model was used to assess both LRT and BRT, given they are assumed to use the same dedicated corridor, travel at the same speed and carry the same volume of patronage.

13.4.2 Dependencies and Constraints

Table 13-4 below lists key dependencies and constraints for the Project, that could significantly change the Project's scope or delivery timeframes. These need to be carefully managed and monitored in subsequent stages.

Table 13-4: Key Project Dependencies and Constraints

Key Dependency/Constraint	Impact and Plan to Manage
PT Futures Programme: Identifies a range of infrastructure and service enhancements to Greater Christchurch's public transport system that is being delivered by local government and the regional council, with the support of the Crown. Infrastructure: Prioritise bus movements on the inner core route, in particular at congested locations to maintain reliable services. This includes bus stop enhancements. Of particular importance is the recommendation along Papanui and Riccarton Road. Service: Enhancements to the five core and four secondary core routes will lead to a new public transport network for Greater Christchurch will more direct routes and frequencies.	The MRT project is dependent upon the PT Futures programme to deliver the wider public transport network and demand for a MRT service. Modelling for MRT assumes the PT Futures Programme is implemented, if not MRT will not achieve expected outcomes. There is an opportunity to align delivery of the PT Future Programme with the MRT Project to reduce cost and reputation risks and enable the benefits of MRT. Key actions: Infrastructure: Ensure the PT Future infrastructure provisions are suitable to the MRT Project's design philosophy to reduce the risk of infrastructure being replaced early in its design life. Service: Network planning and procurement is conscious of a future MRT spine and the need for complimentary network to enable benefits. Early works package to align the two Project's and reduce the risk of rework
Land Use Context: This project is dependent on the outcomes of the Greater Christchurch Spatial Plan (GCSP) and Urban Intensification (including Christchurch City Council's proposed PC14).to set the land use enablement / context for the region and enable urban intensification which is critical to the success of the project.	Impacts on our land use model and estimated growth in the corridor station locations Once the GCSP and Christchurch City's PC14 are notified / adopted an exercise is required to understand the implication on the Projects Land Use and modelling assumptions. This will also provide clarity regarding the land use context or certainty on public support for intensification. It will be necessary to investigate a range of regulatory and non-regulatory tools and incentives beyond zoning to drive a change in intensification and land use patterns to support MRT and a more sustainable urban form for Greater Christchurch. The following are most relevant to shaping the urban outcomes anticipated along the corridor: Implementation of Priority Development Areas. Collaboration and Partnerships, with local and central government and including Kainga Ora, which could enable strategic land purchase, site amalgamation and delivery of exemplar developments, including TOD's. Increased investment in the public realm and supporting infrastructure. Master planning to unlock the potential of different stations/stops, including reducing severance, improving walking, and cycling connections. This will also enable a 'place-based' response which is responsive to local urban conditions and opportunities.

Key Dependency/Constraint	Impact and Plan to Manage
	Regulatory tools such growth management, minimum densities, and more enabling mixed-use policies. Potential tools and levers to support MRT and secure the desired urban outcomes will be investigated further through future spatial planning and Business Case processes.
Transport Context: The Government Policy Statement (GPS) sets out how funding should be allocated between road safety policing, state highway improvements, local and regional roads PT. This is used to outline the Government's priorities for the NLTP.	The MRT modelling and assessment has been completed on the current GPS and local policies and documents to implement these objectives. If a fundamental change is made to national strategic objectives the MRT project may need reassessment to ensure strategic alignment.
Operations: Legislation on Public Transport operating models (SPTF to PTOM) set operational boundaries	Policy changes that can influence how this project is operated and delivered may happen during its pre-delivery and delivery phases. These changes will impact the feasibility of the project through operational constraints. In turn these constraints may change the relative advantages of various technology choices by exacerbating some of their inherent risks.
Neighbourhood & Master Planning: Various neighbourhood plans and network considerations need to be considered including Hornby Master Planning, MRT Transit Malls (Papanui, Merivale, City, Riccarton), wider network planning as a result of movement restrictions.	Hornby Master Plan and freight network considerations will be key pieces of work influencing the design philosophy at these locations and construction phasing. Similarly other local Neighbourhood plans will also impact the design philosophy and the development of these is critical in understanding the wider impacts and mitigation opportunities.
Project Interfaces: Given the scale, location and duration of the MRT project it is expected there will be a number of interfacing projects (known and unknown) which could drive changes to the MRT project or will need to change to align with MRT.	Projects with known interfaces include: ▪ Te Kaha Street Upgrade and Salisbury & Kilmore network improvements ▪ Major Cycleway - Wheels to Wings and Northern Line ▪ Sockburn Roundabout Improvements ▪ Various central city improvement projects. ▪ Asset & service renewals (i.e., wastewater, stormwater, pavement) It is proposed that an investigation is conducted early in the DBC to understand projects that share an interface with MRT and the potential impacts, plans to mitigation these impacts can then be implemented in future design stages and strategic planning.

13.5 PHASING AND STAGING

13.5.1 Overall programme

A high-level staging methodology has been developed for the preferred MRT option to provide the following strategic benefits:

- Allows existing problems to be addressed and benefits to be realised in the shorter-term with less costly interventions (compared to a full-investment non-staged approach which is less attractive where funding is constrained).
- Allows for more informed decision making at each stage, assessing the effectiveness of interventions allowing the programme to evolve as necessary to meet future needs, this includes delaying a mode decision until more information is available.
- Enables the urban growth intensification to support GCSP targets and timeframe.
- Enables integration with the existing network and PT Futures programme providing a consistent user experience across the wider PT network influencing behaviour change towards a permanent balanced mode share.
- Has an early focus on mitigating key risks (threats and opportunities) to the programme's implementation.

The rest of this section presents the proposed phases for MRT and a potential pathway forward including indicative timeframes for key next steps and implementation of the programme. It is anticipated that as the programme evolves timeframes and activities will need to be refined. Funding gateways and monitoring of triggers have not yet been set for each element of the programme. These are anticipated to be monitored and are ultimately expected to supersede this indicative pathway.

13.5.2 Phases for Delivery of MRT

It is recommended the MRT programme is developed in two phases, as outlined in Figure 13-19.

Phase 1 - Involves development of MRT from Church Corner to the Papanui, via the City Centre. It focuses on the inner core of the city (defined as the area within the Orbiter Route), to support intensification around highly accessible centres and minimise urban sprawl. This will promote a sustainable urban form that supports MRT including:

- Reinforcing key centres to support origin / destination travel and investment in key amenities and services at these locations;
- Intensifying along key corridors supported by MRT and other frequent services;
- Intensifying in other highly accessible locations; and
- Minimising urban sprawl to support a sustainable urban form.

Phase 2 would extend the route to terminus stations in Belfast and Hornby. This will support the future role and function of Hornby as a key centre and growth and connectivity in the north of the city.

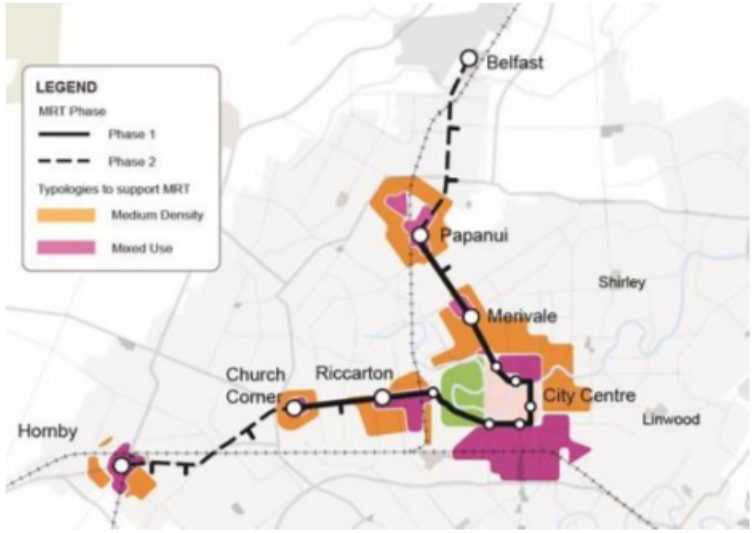


Figure 13-18: MRT supportive land use integration at Phases 1 and 2

Note, consideration was also given to phasing the delivery by separating the corridor into two parts terminating in the city e.g. the south west corridor Hornby to city and then the north corridor Belfast to City (or vice-versa). However, this would trigger other depot and turn around requirements within the central city, which would further complicate delivery. A consistent continuous system through the city centre was therefore considered a more favourable approach.

The proposed phasing will need to be refined further as part of work beyond this IBC, in particular the following needs to be considered:

- The finalised mode decision may further influence the phasing, as LRT has more complex depot requirements that may complicate phasing opportunities.
- The preferred MRT solution and associated phasing, does not preclude the potential for additional MRT extensions in the future, in response to strategic and policy direction. For example extensions to the Airport, east corridor, south corridor, or extension to the regions via the heavy rail corridor, in response to the potential progression of inter-regional passenger rail.

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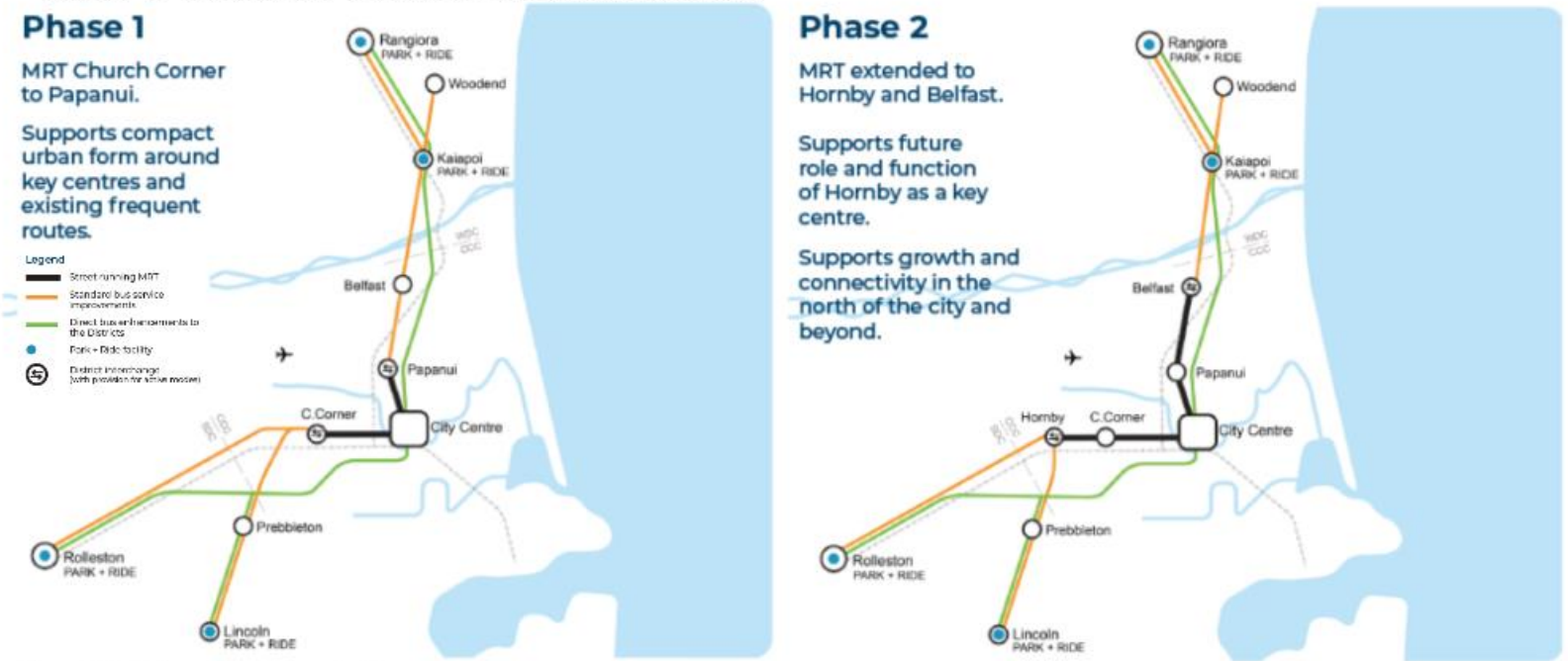


Figure 13-19: Phase 1 and Phase 2 diagrams

13.5.3 Potential Staging Pathway for MRT

A potential staging pathway for the MRT programme has been developed, underpinned by the National Land Transport Fund (NLTP) intervention hierarchy which involves the prioritisation of integrated planning and non-infrastructure elements to meet demand before new infrastructure is considered.

This hierarchy as shown in Figure 13-20, has been considered in the staging of the MRT programme. This alignment helps to maximise value for money by ensuring the lowest cost intervention is implemented first. The figure also identifies specific elements of the MRT programme and how they align to the intervention hierarchy.

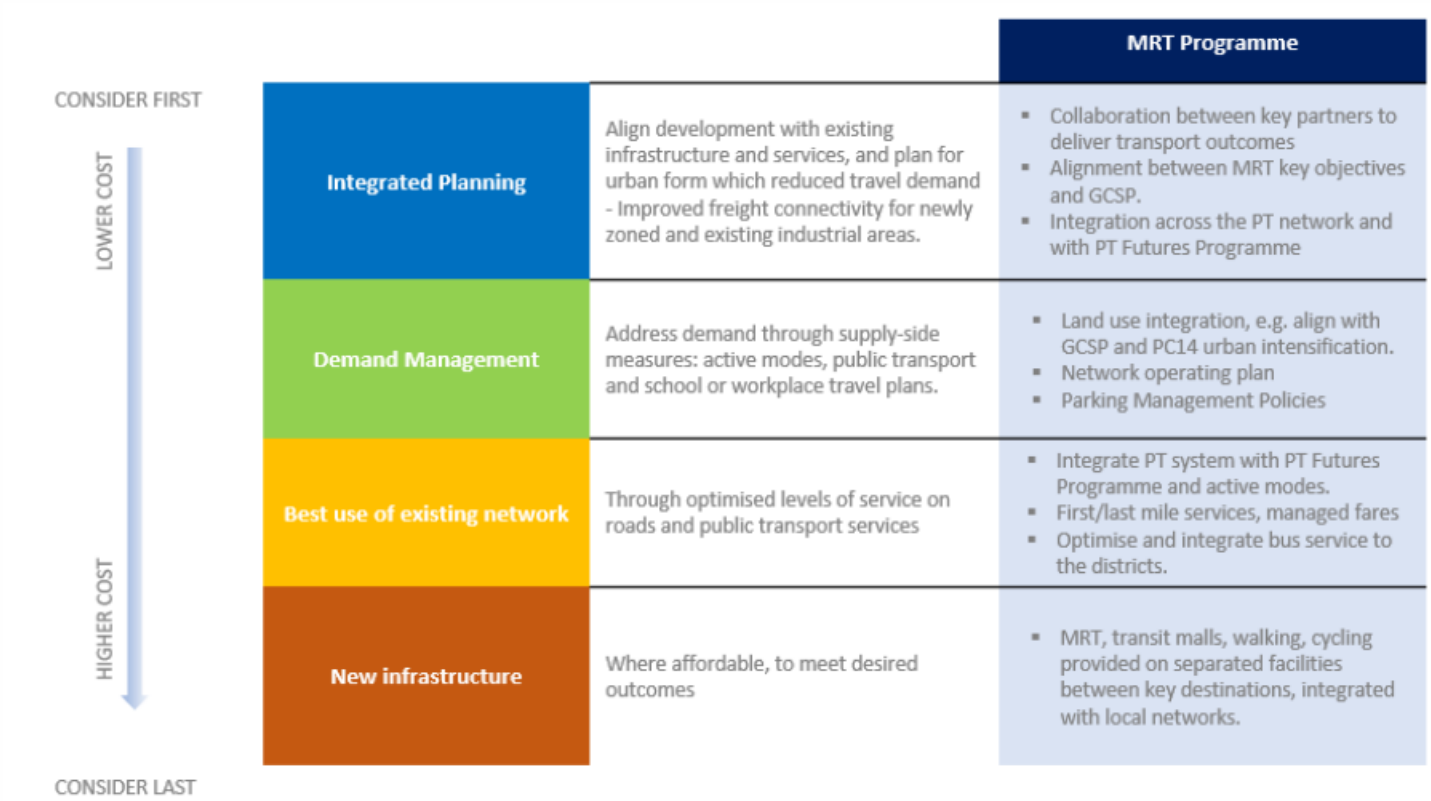


Figure 13-20: MRT Alignment with NLTP Intervention Hierarchy

13.5.4 Staging Horizons

The pathway for MRT assumes the programme will be implemented in two phases (as described in section 8.4.2). This implementation has been broken down into three broad horizons but is agile and can be adapted to meet future demands and align with the GCSP and PC14 to enable intensification outcomes. This includes connections to the districts and using the existing rail system if this is necessary in the future. If inter-rail is built it could work alongside MRT and be delivered in parallel.

The following section describes the three staging horizons of the MRT:

- **Horizon 1** -Detailed Business Case (Early Stages), Optimisation/Alignment with PT Futures Programme
- **Horizon 2** – Detailed Business Case (Finalisation), Pre-Implementation Design, Consents and Planning, Vehicle Procurement
- **Horizon 3** - Design and Implementation of chosen MRT System

However, to inform these initial horizons consideration has been given to the potential construction delivery of the proposed constraint phases

Each Horizon is characterised by:

- The strategic and practical purpose of the horizon.
- The specific elements to be delivered in the horizon (e.g. infrastructure, service), and
- Key decisions, funding gateways (investment management approach) that outline both practical delivery dependencies and operational requirements.

Figure 13-21 illustrates the potential staging pathway for MRT. It also includes the PT Futures Programme work to prompt discussion on opportunities for alignment and optimisation between the two programmes. It is recommended the PT Futures programme is reviewed prior to undertaking any alignment work. An operational start date of 2033 has been used to build the cost and BRC models. This is considered the earliest reasonable time for delivery providing a conservative approach for the financial case. The actual delivery dates need to be refined within the DBC but still need to be delivered prior to 2051 to meet the GCSP and PC14 intensification outcomes.

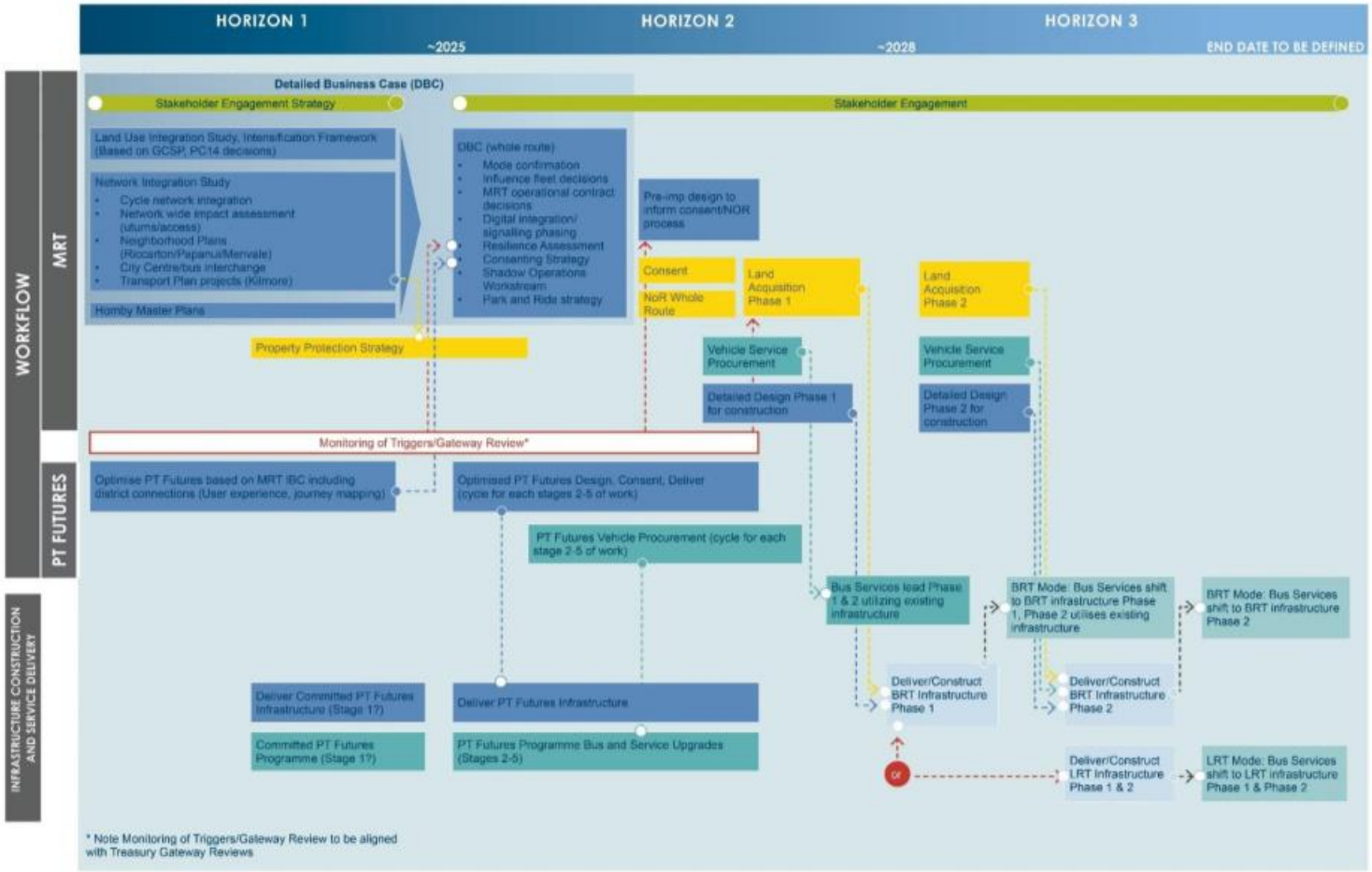


Figure 13-21: Potential Staging Pathway for MRT and PT Futures Programme

Horizon 1: Detailed Business Case (Early Stage), PT Futures Programme Alignment

Horizon 1 includes the early stages of the Detailed Business Case (DBC), the commencement of the Property Protection Strategy and an investigation to align and optimise MRT with the PT Futures Programme as summarised in Table 13-5.

Table 13-5: Horizon 1 Summary

Component	Details
Time Horizon	Endorsement of this IBC until 2025 (tentative)
Description	Detailed Business Case (Early Stage)
Purpose	This stage will enable key investigations to mitigate risks and opportunities identified during this IBC and will then progress to a Detailed Business Case to understand if MRT is a viable option for Greater Christchurch and the best ways to proceed. It will also involve a separate piece of work to align and optimise the PT Futures Programme with the proposed MRT programme.
Key Activities	MRT Project Management and Delivery Setup Establish project team and define project roles and responsibilities and key deliverables. Develop programme to deliver Horizon 1 tasks, confirm funding and working together project partners. Engagement Strategy and Implementation Development of a stakeholder engagement strategy specific to the MRT and active implementation in subsequent phases. This strategy should incorporate and respond to feedback received from the public engagement being undertaken at the writing of this IBC. PT Futures Integration This is a package of work to optimise and align the PT Futures Programme with MRT which is recommended to reduce reputational risks and maximise benefits and value for money across both programmes. Network Integration Study A network integration study to inform subsequent feasibility and design phases. This study would include integration of MRT with the cycle network, network wide impact assessments (e.g. removing u-turns and access at key locations), integrating with neighbourhood plans (Riccarton, Papanui, Merivale) and freight services the city centre/bus exchange and transport plan projects (Kilmore Street). Land Use Integration Study Based on the outcomes of the GCSP and PC14 decisions development of a Land Use Integration Study as an early piece of work to investigate a range of regulatory and non-regulatory tools and incentives beyond zoning to drive a change in intensification and land use patterns to support MRT. This will include collaboration and partnership strategies with Government Agencies around strategic Priority Development Areas, land purchase and exemplar development, local master planning to unlock development potential and regulatory tools such as growth management, minimum densities and mixed-use policies. Hornby Master Planning

	In order to support an MRT station within the town centre and encourage catalyst development changes are necessary to the movement hierarchy in the area. This includes potential changes to the ONF classification for the Main South Road. A master planning exercise is necessary to establish a future vision and address a broad range of changes and will be necessary before extending MRT to Hornby. Property Protection Strategy Development of a property protection strategy as an early piece of work to reduce consenting, corridor protection and property acquisition risks. Property implications have only been considered at a very high level within the IBC. Having an early deeper understanding of this risk and potential opportunities including strategic land purchase for amenity improvements, means the design philosophy can be better understood moving into the full DBC stage. MRT Service and Technology Integration Study Determines and refines the service and technology boundaries to understand fleet technology considerations to ensure an integrated approach to operations and whole of life costs.
Key Decisions	Outcomes of these key investigations and studies will inform subsequent stages of the Detailed Business Case (DBC).
Complexity/Risk/ Constraints/ Opportunities	Completing the investigations listed above as soon as possible will provide opportunities to integrate with the wider network and other proposed programmes of work providing greater certainty and decision confidence on the proposed pathway.

Horizon 2 - Detailed Business Case (Finalisation), Pre-Implementation Design, Consents and Planning, Vehicle Procurement

If the Detailed Business Case (DBC) is finalised in Horizon 2 and endorsed Pre-Implementation Design, preparation of Consents and Planning, land acquisition and vehicle procurement will commence later in this horizon. A summary of Horizon 2 is included in Table 13-6.

Table 13-6: Horizon 2 Summary

Component	Details
Time Horizon	~2025 to ~2028 (Indicative only)
Description	Detailed Business Case (Finalisation), Pre-Implementation Design, Consents and Planning, Land Acquisition (Phase 1), Vehicle Procurement
Purpose	This stage will enable a complete understanding of acceptable risks, uncertainties and the benefits associated with the investment, so that a final decision can be made on whether to implement MRT (Business Case Endorsement). If the DBC is endorsed this horizon will involve pre-implementation design and planning, consents, land acquisition and any procurement required to enable a service led approach to be implemented in Horizon 3.

Key Activities	DBC (Whole Route) Development of the DBC will cover specific details relevant to MRT, including but not limited to mode confirmation; fleet decisions; digital integration/signal phasing; park and ride strategy, shadow operations workstream, operational contract arrangements and a resilience assessment. **If the DBC is endorsed, Horizon 2 may include:** Pre-Implementation Design, Consenting, Notice of Requirement (NoR) Route, Land Acquisition Phase 1 Vehicle Procurement Detailed Design Phase 1 for Construction
Key Decisions	Endorsement of the Detailed Business Case, Mode Selection (BRT or LRT), Property Acquisition Strategy and Implementation, Route Protection

Horizon 3 -Design and Implementation of Chosen MRT System

Horizon 3 includes the service led design and implementation of the chosen MRT System. This stage is currently shown on Figure *14-1* with two options separated by the red 'OR'. Once a mode (LRT or BRT) is chosen this process will simplify to one process. A summary of this Horizon is included in Table 13-7.

Table 13-7: Horizon 3 Summary

Component	Details
Time Horizon	~2028+ ~2033 (Indicative Only) – needs to be refined in the DCB
Description	Design and Implementation of Chosen MRT
Purpose	Detailed design and construction of the chosen MRT service and enabling infrastructure. This stage will involve moving from Service Led Bus Services to the chosen MRT system, details of these stages will need to be refined once the mode is chosen.
Key Activities	Will depend on mode chosen and service led/construction methodology adopted. Activities for this Horizon will be further developed within the DBC.
Key Decisions	Demand led triggers to proceed with next phases, to be confirmed and refined at DBC stage.

13.6 Effectiveness of the Preferred Option

13.6.1 Alignment with the Programme Business Case

The Greater Christchurch PT Futures Combined Business Case recommended an investment programme for inclusion in the partner organisations' Long-Term Plans that:

- ✓ Delivers high-frequency PT options to existing Key Activity Centres (KACs) and planned growth areas;
- ✓ Provides reliable bus services with journey times that are competitive with private vehicles;
- ✓ Enhances the safety and attractiveness of the environment at bus stops for customers;
- ✓ Improves bus routing and frequency that takes people where they want to go, when they want to get there; and
- ✓ Provides a catalyst for land use development adjacent to frequent public transport routes

The Preferred Option is aligned with these overarching core objectives of the PBC and if implemented will help to achieve these outcomes as discussed throughout this IBC.

13.6.2 Key outcomes and alignment with MRT investment objectives

MRT systems provide opportunities for mode shift and behaviour change. Proactive infrastructure that policy enablers can then further enhance to optimise benefits. There needs to be investment in this enabling, proactive infrastructure first; to then generate mode shift, urban form development, and behaviour change. By providing the right built environment up front, MRT can deliver a step change in travel habits and mode shift.

MRT will deliver infrastructure to facilitate the movement throughout Greater Christchurch safely and efficiently through providing low carbon and resilient public transport options. Furthermore, MRT is expected to unlock urban development, which can significantly improve sustainable accessibility and drive an even greater decease in carbon emissions.

With PT Futures (2051 Do minimum) PT Patronage will increase from 51,000 per day in 2021 to 106,000 per day in 2051. MRT will further increase PT patronage to 126,000 per day in 2051 (a 20,000 per day or 19% increase from the 2051 Do Minimum). Annually MRT equates to an increase in PT trips of 5.7 million per year (2051 Option compared to 2051 Do minimum), resulting in the total PT system carrying 36 million passengers per year.

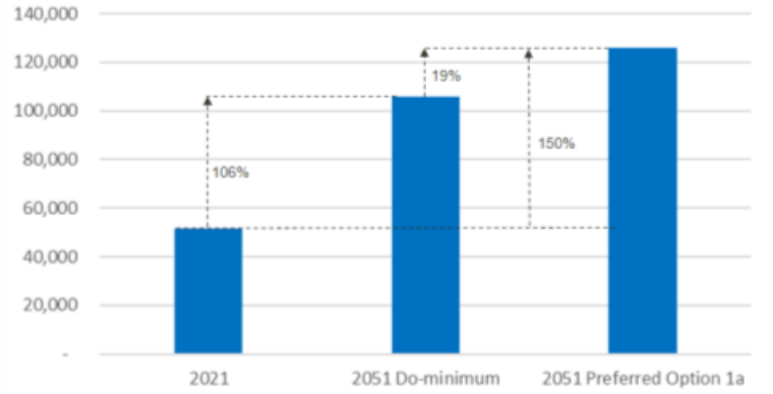


Figure 13-22: MRT Daily Patronage Forecasts

This forecasted ridership on the MRT system is 39,000 people per day. During the peak hour MRT is anticipated to attract over 5000 boardings. Taking into account people joining and leaving the MRT system along the route, the maximum anticipated capacity at any one time and direction is 2000 passengers per hour, as illustrated in the following figures.

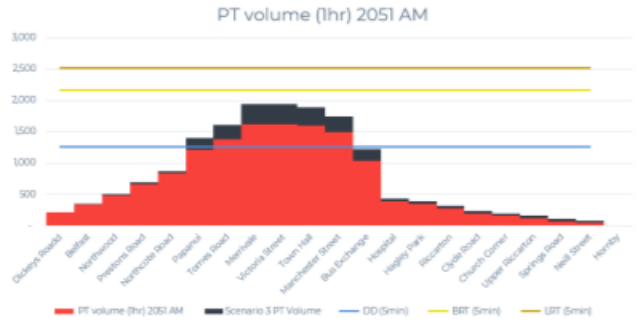


Figure 13-23: MRT AM Passenger Volumes on Northern Corridor

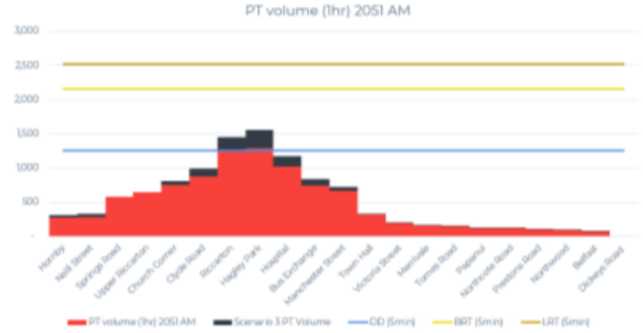


Figure 13-24: MRT AM Passenger Volumes on Southwestern Corridor

MRT is expected to result in an increased mode share beyond the do-minimum (PT Futures) as follows;

- 17% increase (35% to 52%) for trips on MRT corridor to the central city.
- 6% increase (34% to 40%) for trips from Greater ChCh to central city.
- 1.5% increase (6% to 7.5%) for trips across whole of Greater ChCh.

The Preferred Option contributes to all the investment objectives, as outlined below and quantified further with respect to the KPIs in Table 13-8.

Investment Objective 1: *Increased proportion of the population within key prioritised locations and along identified transport corridors within Greater Christchurch with improved access to Christchurch's Central City by 2051*

The preferred MRT solution focuses on high potential job and household growth locations. It compliments and enhances the vision of the Greater Christchurch Spatial Plan, unlocking urban development and increasing housing densification along the proposed route. MRT is expected to stimulate intensification with an additional forecasted growth of 15,000 additional households and 54,000 additional jobs (between 2021 and 2051) within the station (800m) catchments.

Investment Objective 2: Improved journey time and reliability of PT services relative to private vehicles within Greater Christchurch by 2051

MRT will provide a dedicated right of way system with priority throughout the corridor, avoiding the effects of congestion and conflicts with other vehicles. Hence the service will run reliably at consistently higher average speeds compared to a public transport bus service. Reliability is a key differentiator of MRT, which allows rapid transit services to compete with the private car as it provides users with the confidence and trust that they can get where they need to at the required time.

End-to-end (perceived) public transport journey times are expected to decrease as a result of improved in-vehicle journey times and frequency (decreased wait times). This improves access to a range of Key Activity Centre and employment areas. An additional 39,000 households are able to access an additional KAC within 30minutes using PT and accessibility to strategic land use areas, such as Hornby Mall, increases by up to 50%.

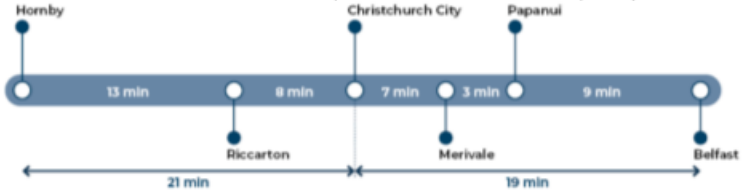


Figure 13-25: In-vehicle journey times between MRT stations

Investment Objective 3: *Reduce emissions from transport movements across Greater Christchurch by 2051*

Transport modelling forecasts the programme coupled with unlocking higher land use can reduce emissions by a further 2% relative beyond the do minimum option (PT Futures) by 2051. Although, there are several other factors and levers that could lead to greater reductions in enabled emissions. These include changes in technologies, human behaviours and policies. By investing in mass rapid transit systems, network wide active transport infrastructure, and improvements to public transport service, MRT is enabling behaviour change and mode shift to lower emission forms of transport.

Reducing transport emissions requires a combination of factors including modal shift towards public and active transport while also reducing the distance people have to travel. MRT will not only provide a reduction in private vehicle kilometres and increased PT mode share, by providing safe and efficient alternative options to driving, but will also facilitate higher density land use. Intensification in targeted locations can result in people living closer to employment opportunities and other amenities. Hence, a greater proportion of people can live, work and play in smaller geographical areas, which also have safe and convenient active and public transport options to access employment opportunities. Ultimately significantly decreasing the distance these people have to travel on a daily basis (commuting to work, getting groceries, going to the park, travelling to schools, sports, social activities, etc.).

13.6.3 Assessment of KPI Measures

The KPI measures associated with each Investment Objective are further outlined in Table 13-8.

Table 13-8: Investment objectives – key achievements

Investment Objective	KPI	Measure	Result
IO1: Increased proportion of the population within key prioritised locations and along identified transport corridors within Greater Christchurch with improved access to Christchurch's Central City by 2051	KPI1: Change in accessibility to and from the Central City	Total households and employment within 800m of a station.	36,000 households and 121,000 jobs
		Households able to access the Christchurch Central City from within 30 minutes using the PT system.	113,500 households (14% increase)
		Change in PT Mode share to the central city	6% difference increase from 34% to 40.0%
	KPI2: Change in access to opportunities from prioritised locations	Change in households and jobs (2021-2051) located within 800m of stations along the corridor	16,000 households and 54,000 jobs
	KPI3: Change in development potential	Area for potential comprehensive development, sites above 3000m2 within the walkup catchment (Include KO, Council and private sites)	365 sites for comprehensive development (sites above 3000m2). Total of 350Ha.
IO2: Improved journey time and reliability of PT services relative to private vehicles within Greater Christchurch by 2051	KPI2: Change in access to opportunities from prioritised locations	Number of Households able to access additional KAC and strategic land uses within 30 minutes by PT.	Additional KACs – 60,200 households Airport – 20,000 households (2% decrease) Hornby Mall – 41,500 households (51% increase) Hospital – 100,200 households (17% increase) Northlands Mall – 73,400 households (4% increase) Riccarton Mall – 85,500 households (29% increase) University of Canterbury – 38,000 households (12% decrease)
		Number of Households able to access 1000 additional employment opportunities within 30 minutes by PT	4,000 households are able to access an additional 1000 employment opportunities
	KPI4: Shift in trips to PT and active modes	Proportion of trips made by PT along mass transit corridor(s) to the central city	17% increase from 35% to 52%

Investment Objective	KPI	Measure	Result
		Change in single occupancy vehicle trips (based on car person trips as a proxy to inform single occupancy vehicle) along the mass transit corridor(s)	17% decrease from 4,900 to 4,000 trips
	KPI5: Change in journey times and reliability by PT and private vehicles	Journey time difference (perceived door to door) from prioritised Christchurch locations to Christchurch City between PT and private vehicle:	PT and Car (perceived) travel time difference improves by -100% (17 mins)-Hornby Hub to City Centre -30% (6 mins)-Northlands to City Centre -200% (20 mins)-University of Canterbury to City -30% (7 mins)-Westgate Riccarton to City
	KPI6: Ability to integrate efficiently and effectively with wider PT	Daily ridership on the mass transit system	39,000
		Overall public transport mode share in Greater Christchurch	1% increase from 6% to 7%
IO3: Reduce emissions from transport movements across Greater Christchurch by 2051	KPI7: Change in emissions from transport movements and improved environmental outcomes	Change in greenhouse gas emissions (tonnes of CO2 equivalent) from transport sources within Greater Christchurch	2% (4,000 tCO2eq/year) decrease from 219,000 to 215,000 tCO2eq/year
		Change in air quality (PM10) and public health outcomes from transport sources within Greater Christchurch	3% (2.5 tPM10/year) decrease from 97.2 to 94.9 tPM10/year
		Change in private VKT per household within Greater Christchurch	1% (1 VKT/household/day) decrease from 54 to 53 VKT/household/day

13.7 ECONOMIC ANALYSIS

The Economic Evaluation, attached as Appendix Q – Economic Evaluation and summarised below follows procedures specified in the Waka Kotahi 'Monetised Benefits and Costs Manual' (MBCM) updated April 2023. For the purposes of the evaluation, Time Zero (assumed to be the first cost not already sunk, associated with pre-implementation) is assumed to be 1 July 2025. The base date for costs and benefits is assumed to be 1 July 2022, in line with the latest available (1 April 2012) MBCM A12.2 (cost) and A12.3 (benefit) update factors.

13.7.1 Existing and estimated PT, motor vehicle and cycle volumes

The adopted methodology involved utilising existing up-to date regional transport models (CTM and CAST) and supplementing these with a PT project model which is used to improve the estimation of changes to PT demand in response to the proposed interventions and provide detailed outputs relating to KPIs and economic assessment.

In particular, the following key strengths of the CTM transport model have been maintained:

- Estimation of travel demand by person (and PT), based on land use inputs for future years previously agreed by the various partners
- A reasonably detailed PT assignment that includes walk access, waiting at bus stops, interchanging between routes
- Mode split sub-model which is responsive to relative changes in generalised cost between modes (PT, private vehicle and cycle)
- Useful outputs that include skimmed travel times (walk, wait, in-vehicle), bus journey times, passenger on/off and in vehicle at each modelled stop
- Critical PT parameters have already been established (calibrated locally) and implemented

The PT project model supplements the CTM transport model as follows:

- The default CTM mode-split model is mostly influenced by vehicle availability (at the household level) and, to a lesser extent, the relative generalised cost of travel between modes. While this approach adequately replicates observed behaviour at 2006, it has been found that the resulting model is rather insensitive to interventions where a reasonable uptake in PT might be expected. Elasticities have been introduced to ensure more appropriate responses
- This is especially the case for interventions which are likely to result in significant change away from existing (2006) travel behaviour (i.e. 'step changes'), which will be required to achieve the proposed mode share targets
- More direct control over inputs and outputs is possible
- The CTM does not include crowding curves for buses, therefore bus capacity is unconstrained. Consideration was given to adding bus crowding curves to the model, but was rejected due to a lack of Christchurch-specific data

The project model 2021 base year scenario was found to adequately match observed data (bus journey times, general traffic travel times, passengers on and off). Therefore, no additional calibration changes were required.

For option testing, the base year CTM PT demands (for each modelled year) has initially be applied to the option PT network (which includes option specific interventions) in order to extract updated travel time data (walk, wait, in vehicle etc.). This has then been used to establish the quantum of travel time savings achieved relative to the base for each Origin-Destination (OD) zone pair. The default CTM mode split-model, which has limitations described earlier, was supplemented by elasticities which have been applied to travel time and other savings associated with proposed intervention options in order to indicate the likely corresponding change in patronage. The resulting adjusted PT demands (option) matrix were finally re-assigned to the option network and key model outputs updated.

13.7.2 Benefit and cost assessment

Due to the scale of the project, Full Procedures have been applied. Key benefits and costs included in the analysis include:

Benefits:

- PT travel time benefits, reflecting increased service frequency, wait time, in vehicle time and interchange time
- PT reliability improvement benefits
- Road traffic reduction benefits (incorporating both positive and negative effects for other road users)
- Walking health benefits (walking to/from bus stops).
- Wider economic benefits (WEBs) have been calculated and the BCRs presented with and without these.

Costs:

- Any additional capital expenditure (Capex) over what is expected to be spent on the Do-Minimum
- Any additional operational expenditure (Opex) over what is expected to be spent on the Do-Minimum

13.7.3 Recommended programme: benefit cost ratio

The resulting present value (PV) of net benefits (with update factors applied) and costs are summarised below. The resulting National BCR_N is 1.4 (BRT variant) and 1.15 (LRT variant), with sensitivity in the range 0.8 to 2.8. The Government BCR_G is 1.5 (BRT) and 1.2(LRT). This BCR is between 1.0 and 3.0, therefore project is considered to have a 'low' rating for the Economic Efficiency component of the Waka Kotahi Investment and Revenue Strategy assessment profile.

Table 13-9: Short term benefit cost ratio for BRT

BCR Summary – Preferred Option (BRT Variant)	
Existing User Service Benefits (39%):	$1,351m
New User Service Benefits (10%)	$341m
Reliability Improvements (39%):	$1,331m
Road Traffic Reduction Benefits (6%):	$192m
Additional Vehicle TTC and VOC (-1%):	$-24m
Walk Benefits (7%)	$243m
TOTAL BENEFITS	$3,433m
Present Value of Costs	
TOTAL COSTS	$2,380m
Benefit Cost Ratio (n) (without WEBs)	1.4
Benefit Cost Ratio (g) (without WEBs)	1.5
Sensitivity Range (including WEBs)	1.0 to 2.8

Table 13-10: Short term benefit cost ratio for LRT

BCR Summary – Preferred Option (LRT Variant)	
Existing User Service Benefits (39%):	$1,351m
New User Service Benefits (10%)	$341m
Reliability Improvements (39%):	$1,331m
Road Traffic Reduction Benefits (6%):	$192m
Additional Vehicle TTC and VOC (-1%):	$-24m
Walk Benefits (7%)	$243m
TOTAL BENEFITS	$3,433m
Present Value of Costs	
TOTAL COSTS	$2,988m
Benefit Cost Ratio (n) (without WEBs)	1.1
Benefit Cost Ratio (g) (without WEBs)	1.2
Sensitivity Range (including WEBs)	0.8 to 2.3

13.7.4 BCR refinements

This analysis assumed LRT and BRT to provide similar user and service benefits. As discussed in the mode selection part of the optioneering process, there is evidence worldwide that LRT can attract more users and stimulate more growth than a BRT options. The expected uplift difference between LRT and BRT can be approximately 25% higher, linked to this, the Land Value Uplift could be superior for LRT than BRT.

Our assumptions reflect a conservative approach to the evaluation of LRT Benefits for Option 1a, strengthening the decision to carry forward both modes to the DBC stage of the project. It will then be possible, while refining the features of the mode system considered, to best quantify the advantages LRT may have to BRT in these terms.

13.8 INVESTMENT PROFILE

13.8.1 Prioritisation of the Proposed Investment

The priority for the potential investment has been assessed in accordance with the Waka Kotahi method for the 2021-24 National Land Transport Programme[2]. This Investment Prioritisation Method requires the assessment of three factors – GPS alignment, Scheduling and Efficiency. The assessment against each factor is outlined below.

GPS Alignment

GPS alignment indicates the alignment of the proposed project with a GPS strategic priority and identifies the potential contribution to achieving it. A rating of Very High/High/Medium/Low alignment is applied. It is noted that where a project contributes to more than one GPS strategic priority, the rating is assigned based on the highest expected contribution to a single strategic priority.

Development of the Business Case is under the overarching strategic direction of Our Space, with strong links to the GPS 2021. The investment in MRT is expected to contribute to three of the four GPS 2021 strategic priorities (Better travel options, climate change and safety) for investment in New Zealand's land transport system[3]. High level commentary on how the recommended option contributes to each of these strategic priorities is outlined in the following Table 13-11.

[2] Investment prioritisation Method for the 2021-24 National Land Transport Programme, Waka Kotahi December 2020

[3] Government Policy Statement on Land Transport 2021/22-2030/21, Waka Kotahi, September 2020

Table 13-11: Recommended option's alignment with GPS 2021

Strategic priority	Benefit	Alignment of recommended option with strategic priority
Safety: Developing a transport system where no-one is killed or seriously injured	Impact on social cost and incidences of crashes	The recommended programme of MRT will contribute towards a mode shift from private vehicles to public transport, which is an inherently safer mode of transport. Also, any reduction in congestion from MRT resulting in a more efficient network is also likely to achieve safer outcomes. Further, the provision of a prioritised MRT corridor will reduce conflicts with general traffic and further improve road user safety. Upgrades to station facilities and reduced wait times along the MRT corridor will also contribute to perceived safety element improvements.
Better travel options: Providing people with better transport options to access social and economic opportunities	Impact on access to opportunities	The MRT system provides an alternative travel mode to private vehicles use. The recommended MRT option capitalises and further enhances the benefits to the districts from the PT Futures Business Case, and provides better travel options within Christchurch City. The priority afforded to MRT enables a reliable and consistent travel time by avoiding conflicts with other vehicles. End-to-end (perceived) public transport journey times are also generally expected to decrease as a result of improved in-vehicle journey times and frequency (decreased wait times). This will result in improved access to a range of destinations and KACs around Christchurch, and social and economic opportunities. This includes improved accessibility to goods and services and jobs, with town and urban centres within Christchurch being well connected.
Improved freight connections: Improving freight connections for economic	Impact on network productivity and utilisation	Improving freight connections is not a key strategic priority for this project. However, any initiative to reduce private vehicle kilometres travelled will help to provide additional capacity and reduced congestion in the network for other activities such as freight. It is noted that the preferred MRT option will require integration with the freight network, specifically at Hornby to enable MRT to align with the Hornby centre, providing a potential opportunity for optimising this centre as a whole, including better integration with the freight network..
Climate change: Developing a low carbon transport system	Impact on GHG	The recommended option will contribute towards a mode shift from private vehicles to public transport (MRT). Mode shift is expected to occur across Greater Christchurch, with greatest benefits being realised along the mass transit corridor. There are expected reductions in greenhouse gas emissions, air pollution (including from PM10), and vehicle kilometres travelled, associated with this mode shift behaviour. These will all contribute towards climate change objectives including a low carbon transport system.

The highest GPS metric relates to 'Better travel options and climate change' components of the strategic priorities. This focuses on the mode choice (e.g., shift from private passenger vehicle to other modes) and greenhouse gas (GHG) emissions reduction and air quality improvements. In addition to the information provided in Table 13-11 above, this GPS metric has been further expanded on below, under the GPS 2021 guidelines.

Mode shift for the recommended option has been assessed against several measures, across Greater Christchurch and along the option's mass transit corridors. The KPIs most closely aligning with the Investment Prioritisation Method rating criteria are the PT mode share to the Central City in 2051, both along the mass transit corridor and across Greater Christchurch. When considering improvements along the mass transit corridor, there is approximately a 21% change (reduction) in the private vehicle (car) mode share in 2051 for the preferred option relative to the do-minimum. This reflects a 2-hour AM peak and considers all modes as per the measure definition in the GPS Alignment table for 'Better travel options and climate change'. The rating of the corresponding metric would be **Very High** as a 21% change in private vehicle mode share exceeds the 6% rating listed for very high.

For trips originating from locations across Greater Christchurch, the preferred option's PT mode share (PT trips) to the Central City increases by 16% from the do-minimum to the preferred Option 1A, where total person trips for this metric considers PT, car and bike modes.

The increase in PT trips (and reduction in private vehicle trips) arising from MRT and specifically the preferred option is therefore noticeable across Greater Christchurch. Further, the preferred MRT option performs particularly strongly when focusing on benefits along the mass transit corridor.

A Very High rating indicates that both the extent of alignment and scale of the expected contribution are well aligned with the GPS strategic priority.

Scheduling

Scheduling in the Method relates to either of two factors: criticality and interdependency. Criticality is the significance of the project's role as part of the network, and the degree of impact to users, particularly due to availability (or not) of alternatives. Interdependency refers to the degree to which the project is necessary to unlock the benefits of another related or integrated investment. The other investment may be part of the same transport programme or package, or a major housing or industrial development or international event.

In this case the dominant factor is interdependency as this project is intrinsically linked to wider strategic initiatives. In particular, the improvements included in this IBC will drastically influence the realisation of benefits associated with the Greater Christchurch Spatial Plan and the wider programme. In addition, the direction of MRT will also significantly influence the direction of other planned projects including those in the Christchurch Transport Plan and Greater Christchurch Transport Investment Plan.

Similar to the rating of GPS alignment, a rating of High/Medium/Low is applied. Considering the high interdependency with other projects, this project meets the **High** criterion of interdependency as it is "part of a programme, package or another investment, and its delivery in the 2021 NLTP period is required to enable further implementation of that programme, package, or investment" and non-delivery means that "one or more benefits will not be achieved or will be delayed for more than 3 years"

Efficiency

Efficiency indicates the expected return on investment and considers the whole of life costs and benefits. BCR is generally used for looking at monetised impacts of the investment. For this business case, the BCR ranges from 1.1 to 1.5 with a sensitivity range of 0.8 to 2.8, therefore giving a **low** rating. WEBs and sensitivity analysis indicate that the project BCR, when refined at DBC Stage to include refined technical assumptions and costs, could increase to a Medium priority range.

Overall Priority

The preferred option has been assessed against the 2021-24 NLTP Investment Prioritisation Method. The assessment indicates that the preferred option has:

Very high GPS alignment; **High** scheduling; and **Low** efficiency.

Applying the Investment Prioritisation 3-factor matrix to the above ratings, the priority order for the project would be **Priority 2.**

13.8.2 Appraisal Summary Table

Appraisal Summary tables prepared for all shortlisted options in accordance with Waka Kotahi requirements[4], are included in Appendix U – Waka Kotahi Appraisal Summary Tables..

[4] https://www.nzta.govt.nz/resources/appraisal-summary-table/


COMMERCIAL CASE
WSP | Aurecon | Boffa Miskell |QTP

14 COMMERCIAL CASE

14.1 PURPOSE

The purpose of this Commercial Case is to provide decision-makers with appropriate assurance of the viability and deliverability of the commercial components of the Project.

This commercial case includes:

- The industries capability
- Funding certainty
- Delivery options and issues
- Project scope and potential procurement pathways

The analysis presented in this Commercial Case is based on the identified corridor, stop locations and a mode agnostic solution (LRT or BRT).

14.2 INDUSTRY CAPABILITY

At this IBC stage the preferred option is mode agnostic between bus rapid transit and light rail. The industries capability to deliver the next stage, the Detailed Business Case, including early investigations will vary depending on the mode selected.

The majority of consultants in Aotearoa are multi-national and therefore have the capacity to resource a project of this size and nature. However, given the forecast programme of major project work of this nature across the national transport sector, industry capacity may be a risk for both consulting service and for internal capacity and capability of project partners and key stakeholders.

Beyond the large resource pool, it is important to have the right capability sourced locally and internationally committed to this Project. To provide the best resources, a blend of local and global specialists will be needed. Industry knowledge and lessons learnt should also be drawn from other similar projects across New Zealand, includes Let's Get Wellington Moving and Auckland Light Rail. Advanced planning and careful programming of work will help to alleviate resourcing issues.

14.3 FUNDING CERTAINTY

The recommended programme for the Preferred Option allows for the MRT to be developed in two stages within a 10-year horizon. The staging can be completed to keep pace with anticipated growth in demand as well as the ability and time needed to implement the recommended infrastructure changes. Funding is yet to be sourced and confirmed, refer to the Financial Case for details around funding requirements. It is important to note that funding uncertainty will bear on the risk profile of the project, it may impact its ability to secure timely delivery and value for money.

14.4 DELIVERY OPTIONS AND ISSUES

14.4.1 Responsibility

The "traditional" split of responsibilities for implementation of PT services and infrastructure is outlined below:

- ECan responsible for planning and operating urban PT services in Greater Christchurch (Metro).
- CCC, WDC and SDC responsible for delivering the PT infrastructure on their networks within their respective districts.
- Waka Kotahi responsible for delivery of PT infrastructure along State Highway portions of the network.

The suitability of this typical delivery model needs to be considered in context of MRT and its associated risks. The benefits, intellectual property and experience of the regional and local council's needs consideration alongside Waka Kotahi's experience in delivering complex major projects, to ensure a delivery model that is fit for purpose and minimises risk to successful delivery. The DBC should consider various models in detail to inform subsequent stages of procurement, project governance and roles and responsibiliites as discussed in the Management Case.

14.4.2 Consenting

The Indicative Consenting Strategy for the Project identifies opportunities available to secure statutory approvals under the relevant resource management provisions to deliver the Project. The indicative strategy is based on the current Project scope and may need to be revised as the scope develops in the next phase.

The recommended option aims to utilise the existing networks across the city, implementing a street-running route connecting Hornby and Belfast via the Central City. The recommended option also includes an enhanced bus service to Waimakariri and Selwyn Districts.

The majority of the route is within existing road reserves and transport corridors. Where measures relate to network improvements (such as frequency improvements / non-infrastructure) or improvements such as the establishment of minor infrastructure upgrades (i.e. new bus stops within the existing transport zone/road reserve), it is anticipated that any associated environmental effects will be minimal, as it is occurring within existing urban transport corridors. This is largely anticipated to be the case for the Waimakariri and Selwyn Districts. Any corridor upgrades to improve bus priority should consider integration with the streetscape and urban environment

Despite this, statutory approvals will be required to deliver the Project. These will largely depend on the final selected mode and the associated nature and scale of the works. The measures with potential to result in a need to obtain resource consent are those that require land outside the transport zone (i.e. any new bus stops, stations, interchanges and/or depots), construction methodology and the location and treatment of environmental attributes within the road reserve (such as waterbodies and street trees).

Any earthworks associated with the construction of new infrastructure to support the proposed upgrades should be managed appropriately with site specific erosion and sediment control and dust control measures. Earthworks within 5m for example, or the felling of, any street tree within the road corridor that is greater than 6m in height will require consent as a restricted discretionary under the Christchurch District Plan.

In addition, it is noted that all three district councils (Waimakariri, Selwyn and Christchurch City) are currently undertaking district plan reviews, to give effect to Resource Management (Enabling Housing Supply and Other Matters) Amendment Act 2021 (EHS Act 2021). The EHS Act seeks to enable the development of three houses of three storeys in height within residential sites without the need for resource consent. Selwyn and Waimakariri District Councils have notified their plan changes, with Christchurch City to be notified on 17 March 2023. The nature of the works required to support the Project (i.e. access arrangements, anticipated daily vehicle movements, earthworks, impervious service area, landscaping etc.) may have the potential to impact on consents granted and conditions.

To add further complexity to the consenting pathways for the Project, the Government is currently undertaking a Resource Management Reform, repealing the Resource Management Act 1991 (RMA). The proposed Natural and Built Environment Act (NBA) will be the primary piece of legislation in the reform package supported by the Strategic Planning Act (SPA) and Climate Adaptation Act. A bill of the NBA was introduced to the house late 2022 and is expected to be passed by end of 2023. While it is likely that there will be a transition period, there is increased uncertainty of the implications of the reform package and the NBA which introduce un-challenged concepts and terms. This increases the complexity in assessing the consenting requirements and what processes will be required and available for the Project.

14.4.3 Property Planning

The current design approach for the MRT assumes large-scale corridor widening will not be necessary. But strategic land acquisitions will be necessary to deliver the project outcomes near stations, major intersections, and depot sites. These requirements will also be further influenced by the final mode decision.

Given the city shaping opportunities this project presents, consideration should be given to targeted strategic land purchases in future stages to support the intensification anticipated (including change in housing typologies), the change in the character of the corridor, and in achieving quality streetscape/public realm and specific 'place' outcomes.

The land requirement plans, and property acquisition strategy is to be developed during the DBC, when there is more certainty regarding mode technology and the design philosophy has been agreed in more detail.

In the DBC collaboration and partnerships should be further investigated, including with local government, central government and Kainga Ora, to enable strategic land purchase, site amalgamation and delivery of exemplar developments, including TOD's.

Further details of work that has been completed around required property acquisition can be viewed in the Mass Rapid Transit Route Stage 1- Christchurch City Property report prepared by WSP. Key risks pertaining the property aspects include:

- Implications on design philosophy.
- Project timeframes and resolving objection to compulsory acquisition; and
- Property escalation cost while identifying land requirements.

14.4.4 Required Services

During this IBC service impacts/conflicts have been considered at a high level only. Further investigation will be required in the DBC, taking into consideration the confirmation of the design envelope, particularly at intersections, agreed mode and advances in technology. Early discussions with service providers are also recommended at DBC stage to further quantify and mitigate the potential risks.

Underground services have not been assessed but it is known that within the preferred corridor Orion has 66kV cables. It is uncertain at this stage if any protection or relocation of these cables may be required during construction, but it is a risk to the Project.

It should also be noted that the preferred corridor and depot site will require services from either Orion or Transpower. This will depend on the load requirements and grid connection point and requirements will be linked to the mode chosen.

14.5 DETAILED BUSINESS CASE PHASE

14.5.1 Scope of the detailed business case

The next formal stage of works under a business case process is the detailed business case (DBC) which builds on this IBC to ensure the Project is viable and will meet agreed objectives. A potential forward pathway and programme has been developed and is shown in Figure 14-1.

This pathway supports a delayed decision on mode until further investigations are completed within the DBC stage. Once a mode decision is made the design and construction process will be refined. This refinement is indicated by the red "OR" box on Figure 14-1. This approach: Provides an opportunity to optimise the PT Futures Programme to ensure works are congruent with the proposed MRT.

- Integrates mitigations and controls for key risks identified, as discussed further in the Management Case, with full risk register also provided in Appendix W – Project Risk Register.
- Provides flexibility to manage funding constraints by providing staging, early work/investigations that can be commenced if required. These are highlighted to the left of the DBC scope.
- Enables flexibility to add additional scope over time if necessary (e.g. links to the airport).
- Allows the project to be delivered in two phases adopting a service led delivery approach. Refer to Section 1.1 for a discussion on potential staging of this project and the reasons for adopting a service led delivery approach which allows services to be implemented prior to investing in infrastructure.

14.5.2 Key components and priorities for the DBC scope are:

Engagement Strategy and Implementation

A stakeholder engagement strategy specific to the MRT objectives should be developed at the front end of the DBC and then actively implemented in subsequent phases. This strategy should incorporate and respond to feedback received from the public engagement being undertaken at the writing of this IBC.

Network Integration Study

MRT has significant interfaces with the surrounding network, to reduce the risk of these interfaces it is recommended a network integration study is completed at the start of the DBC to inform subsequent feasibility and design phases. This study would include integration of MRT with the existing roading network, active mode facilities including the cycle network, network wide impact assessments (e.g. removing u-turns and access at key locations), integrating with neighbourhood plans (Riccarton, Papanui, Merivale), the city centre/bus exchange and transport plan projects (Kilmore Street) and the freight network.

Land Use Integration Study

Based on the outcomes of the GCSP and PC14 decisions development of a Land Use Integration Study as an early piece of work to investigate a range of regulatory and non-regulatory tools and incentives beyond zoning to drive a change in intensification and land use patterns to support MRT. This will include collaboration and partnership strategies with Government Agencies around strategic Priority Development Areas, land purchase and exemplar development, local master planning to unlock development potential and regulatory tools such as growth management, minimum densities and mixed-use policies.

Property Protection Strategy

Development of a property protection strategy has been identified as an early piece of work to reduce consenting, corridor protection and property acquisition risks. Property implications have only been considered at a very high level within the IBC. Having an early deeper understanding of this risk and potential opportunities, means the design philosophy can be better

understood moving into the full DBC stage. Timing and scope for this work will be developed during the early works.

DBC Specialised Workstreams

The DBC will also need to cover specific details relevant to MRT, including but not limited to mode confirmation; fleet decisions; digital integration/signal phasing; shadow operations workstream, operational contract arrangements and a resilience assessment.

In addition, once the mode is selected within the DCB it is recommended a shadow operations team is engaged to support the design process by identifying and providing operating requirements at early stages of design, reducing conflicts and rework in later design and implementation stages. This mitigation has been successfully used on other mega projects.

The specific scope of work and a delivery programme will be developed as part of the procurement process at the commencement of this IBC.

Optimising and integrating with PT Futures, Hornby Master Planning

Parallel workstreams not included in the DBC but also shown on Figure 14-1 are the PT Futures workflow and a Hornby Master Planning package. It is assumed these will be procured separately from the DBC but they are completed as early as possible to reduce reputational risks and maximise benefits and value for money across both programmes. More details around these work packages are provided in the Management Case Next Steps..

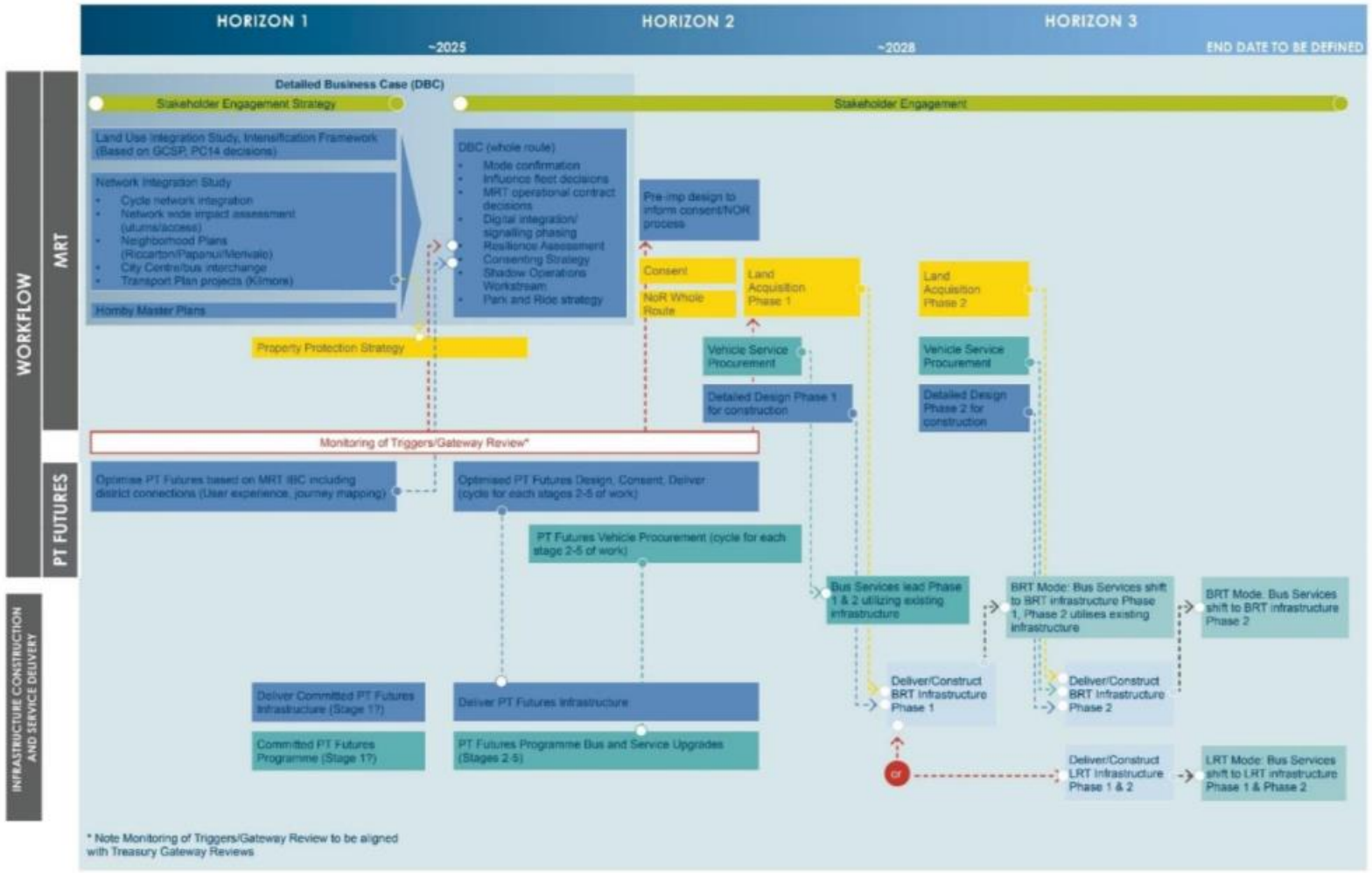


Figure 14-1: Potential Staging Pathway for MRT

Timeframes for the detailed business case

The delivery of MRT has been considered over a 10-year horizon to identify how the timing for its implementation is linked to a range of other projects and initiatives, including outcomes of the Greater Christchurch Spatial Plan work and the PT Futures accelerated investments. Acknowledging the extent of unknowns at this IBC stage, there are identified opportunities that may need the early delivery of MRT. For instance, if MRT is to be strategically leading change of urban form to support the reduction of future emissions, rather than being responsive to change, then MRT's accelerated implementation will be necessary. To fully understand these opportunities and decide on a potential investment in MRT to deliver them, the next stage of the MRT Investment lifecycle must follow this IBC without delay but will need to align with available funding.

Indicative programme durations anticipate scoping, procurement and award of professional services to occur within a 12-18 month period. This is then followed by a 24-36 month design, consultation and planning period. From the completion of the DBC, the planning approvals, land acquisition and construction, assuming a two-phase approach, are anticipated to occur prior to 2033 but this will need review within the DCC phase to align with GCSP and PC14 targets.

Funding and governance approvals present a potential delay risk to the pre-implementation procurement and the delivery timeframes. Delays will have potential knock-on effects throughout the programme.

Progressing the DBC as early as possible will enable more efficient systematic planning, ensure integration opportunities with accelerated PT Futures infrastructure delivery are maximised and support better risk quantification and hence improved mitigation.

In addition, planning/property aspects such as property protection, notice of requirement land acquisition can be better planned and executed. The longer a city shaping project like MRT is delayed, the more barriers there are to change and integration with the wider network, delay will also result in a loss of momentum and critical working knowledge already acquired.

14.5.3 Procurement and risk allocation options for the detailed business case

The expectation is that all procurement associated with the project will be conducted according to the Government Procurement Rules (4th edition), regardless of the procuring organisation.

The next stage of procurement needs to leverage industry knowledge, while enabling integration across the various interfaces and partners/stakeholders. This integration is essential for ensuring effective decision making, establishing forward momentum, appropriately allocating risk and optimising the benefits realisation of MRT.

Section 16.4 Next Steps outlines early investigations and packages of work that have been identified to best prepare the Project to go into the Detailed Business Case phase. This section includes high level scope for each package and suggested organisations to lead the delivery of work. In the absence of established funding framework and confirmed governance models, the procurement strategies for the delivery/leading organisations will apply.

The following table outlines various procurement models. Specific strengths and weaknesses for each model and its performance during a DBC (including early investigations) have been provided for consideration. Please note there are other factors and models that are not included in this table that may be considered when selecting the procurement model for MRT. It should also be noted that as the project evolves through the project stages the procurement model may need to evolve to manage specific risks and constraints associated with the stage.

Table 14-1: Procurement Options for DBC

	Strength	Weakness	Suitability to MRT DBC
Traditional Client/ Consortium IBC/DBC model	Strong ownership of performance from the Professional Technical Advisor (PTA) A significant benefit is established relationships that come with a consortium-led PTA. This model can be supplemented by best-for-project services procured separately by client or directed into PTA. e.g. Early investigations could be appointed directly to manage key risk areas and better inform the scope required for the DBC. Commercial mechanism can reflect scope uncertainty through development of task plans against scope as the project develops. This allows team to scale up and down accordingly.	Client may have preference for particular specialists. This can be overcome working with the PTA to incorporate nominated specialists. It has the potential for some partners to disengage from the project.	The most efficient model in terms of procurement and where the general scope of the services and outcomes sought are understood, even if there is uncertainty as to how the project will develop A mechanism for the contract and commercial approach can be executed through the development of "task plans" for elements of the scope as the project developed through the phases. This enables the client to ensure that the team scales up and down according to the project demands, optimising utilisation of the team and managing cost effectively. Enables the work to get underway with lower value investigations while there is funding uncertainty.
Alliance	Allows for full integration of owner partners (Waka Kotahi, CCC, SDC, WDC, ECan) and Principal Technical Advisor proponents (PTA) at a commercial level which encourages joint ownership of outcomes, and can be measured against Key Result Areas (KRAs). Unanimous decision-making across all Alliance Participants is a fundamental principle of an alliance. Full integration of partners.	Significant effort and cost up front to establish agreed contractual and commercial terms and alignment on KRAs to drive the right behaviours and best for project outcomes. Ongoing cost of governance does not allow for effective downscaling of the team depending on the project stage. Alliances perform best where financial returns are directly related to performance against a tight scope. Value is lost where scope flexibility is required.	Other models are better suited to DBC phases of projects and can achieve the same level of collaboration and project outcomes, offering better value for money. The Alliance model manages/integrates internal partnerships well but can sometimes lose focus on managing/integrating with external partners and key stakeholders.
Special Purpose Vehicle (SPV)	Dedicated organisation set up to run the delivery from concept to operations which brings singular focus of delivering the	Require substantial legal and commercial frameworks to be set up rendering them expensive to time consuming to establish.	The establishment of a SPV would be more beneficial in subsequent stages of the project/programme (pre-implementation

	Strength	Weakness	Suitability to MRT DBC
	project/programme. As long as the project is well defined, this will lead to efficiencies in delivery Inclusive governance with multiple clients as project partners.	This expense would be disproportionate for a DBC phase Client partners/sponsors can lose a level of influence and control depending upon their role in the SPV.	onward) once the scope and programme are better defined and the implementation programme timing confirmed. This would be considered as part of the Management Case for the DBC.
Role by Role best for Project	Able to secure the people and organisations that the client wants on a specialty basis. Able to test value for money through the procurement of roles. Not all services required at same time so can be procured as and when needed.	Needs strong client leadership, depth of capability and direction to drive everyone on a best for project basis. Requires depth of procurement capability to procure services in a timely manner to achieve programme objectives. Introduces integration complexities, but these can be overcome on the basis that everyone is working on a best for project basis. Project management, cost management of individual supplier contracts can be more complicated and require greater client management. More expensive than single consortium. Loss of single point delivery accountability.	This model is not recommended for the DBC as a whole. It could be considered for early investigation stages of the DBC but would require significant effort to ensure integration across the various pieces of work.


FINANCIAL CASE
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15FINANCIAL CASE

The financial modelling of the 5 short list options is reported in 8.1.7 above, as part of the affordability and fundability analysis of each option in the short list assessment. The analysis presented in this Financial Case is based on the cost estimate for the identified corridor, station locations and a mode agnostic solution (LRT or BRT), of Option 1a.

A full financial and funding analysis is to be completed at Detailed Business Case stage. This Indicative Business Case Financial Case provides the high-level summary and analysis required for decision makers to assess the financial dimensions of the project that may result from a future detailed business case, and the financial commitment related to the next phases.

15.1 APPROACH AND ASSUMPTIONS

The whole-of-life financial analysis of the preferred solution has been conducted in line with Waka Kotahi Guidelines for IBC.

Costs for Pre-delivery, Delivery and operating phases are all provided in real terms, Qtr1 2023 New Zealand dollars. Nominal terms costs, including the forecast effect of inflation, are not provided at this IBC level.

Costs for option 1a are detailed in Appendix R – Cost Estimate and include both capital and operational expenditures for the pre-delivery, delivery and operating phases of the contract.

For the purposes of providing a conservative financial case the earliest reasonable delivery timeframe for the start of services is 2033 has been used to build the cost models and BCR calculations.

15.1.1 Quality Assurance

The base estimate build up and estimate contingency (uncertainty and risk) process is presented in Appendix R – Cost Estimate and follows Waka Kotahi's Risk Management Process Z44 and Cost Estimate Manual SM014.

An external independent high level review of the cost estimates for options 1a LRT and 1a BRT was commissioned by Waka Kotahi and carried out April 2023. As a result, a reconciliation of the cost estimates, risk and funding risk contingency was completed. The financial information provided in this Financial Case use the reconciled costs.

Note that early estimations of Delivery Phase Costs and Operating Phase Costs presented in section 8.1.7 above have not been modified so as to protect the integrity of the option selection process.

At a high level the reconciliation process increased the P(95) CAPEX cost of Option 1a LRT from $3.8bn to 4.0bn by way of:

- Aligning Contingencies and Funding Risk Contingency to all element of cost.
- Applying Contingencies of 30% to all elements of cost.
- Increasing Funding Risk Contingencies to 45% to all elements of cost.

15.1.2 Risks, Contingencies and Optimism bias

In developing the financial case, appropriate care was taken to avoid optimism bias by using a rigorous cost-estimation methodology (SM014) and recent industry data from similar projects and operations in New Zealand and worldwide to benchmark costs estimates. This included the operating phase costs of similar vehicles on comparable services. This effective baselining of whole of life costs on recent and relevant data matches the inherent uncertainty remaining at IBC stage.

When estimating our base estimates, all assumptions and simplifications required were taken to er on the conservative side and mitigate the risk of under-estimating the costs of the project.

The accuracy of the cost and benefits estimations relied upon necessarily reflect the uncertainty of the solutions that may result from a future Detailed Business Case. Acknowledging transparently this uncertainty, and building on the findings of the external review, this financial analysis provides risk adjusted costs built by applying,

- For all delivery phase capital expenditures, a 30% of Base Estimate contingency and a further 45% of Base Estimate Contingency to estimate an equivalent P(95) cost estimate.
- For all operating phase operational and capital expenditures, a 10% of Base Estimate contingency and a further 15% of Base Estimate Contingency to estimate an equivalent P(95) cost estimate.

This conservative approach provides a total 75% contingency on conservative delivery phase capital expenditure that reasonably reflects the risk profile of the project and is adequate for a project of this magnitude at this stage of its planning.

15.1.3 Project delivery phasing

Considering the start of this project is still contingent to many decisions, this financial case adopts a simplified phasing approach to the project. A simplified delivery programme including limited representation of procurement and delivery allocation of costs across delivery years was adopted.

The analysis of the pre-delivery and delivery costs extends across a duration of 10 years, from Year -5 to Year 4. Year 0 being the year when physical works start.

The analysis of the operation phase of the contract extends over 66 years, from Year -5 to Year 60 to allow for the net operation cost analysis to consider Do-Min operating phase costs incurred during the Pre-delivery and Delivery phases. Year 6 is the first year of operation of the Mass Transit service.

15.1.4 Delivery phase costs

Option 1a requires a maximal capital investment of **$3.0bn** to **$4.0bn**, in real term 2023 qtr1 New Zealand dollars, including all contingencies and funding risk contingencies. A likely delivery cost, excluding funding risk contingencies, while very uncertain at this early stage of the project can be estimated between $2.2bn and $3.0bn.

Capital costs reported consider the delivery of all aspects of the infrastructure, stations, facilities and fees required during the delivery phase of the project. Table *15-1* below provides a breakdown of the capital costs associated with:

- Option 1a – LRT
- Option 1a - BRT

Table 15-1: Breakdown of Capital Costs

Elements of Capital Costs	$m, real terms, 2023 qtr1	
	BRT Solution	LRT Solution
Property Costs Allowance	119.03	119.03
Project Development	54.94	54.94
Pre-Implementation Phase	104.41	143.14
Implementation Phase	60.04	81.34
Physical Works	1261.80	1731.38
Rolling Stock	87.00	182.80
Contingency	506.16	693.79
Funding Risk Contingency	759.24	1040.68
Total excluding contingencies	1687.21	2312.63
Total with all contingencies equ. P(95)	**$ 2,952.61m**	**$ 4,047.10m**

15.1.5 Operating phase costs

Operating phase costs reported include the operational expenditures required for the management, operation (including energy) and maintenance of the fleet of mass transit vehicles, their depots, and facilities, as well as the operation costs of the PT Futures high frequency buses linking the preferred MRT corridor's end to districts.

The table below provides estimates of yearly operational and maintenance costs associated with Option 1a – LRT and option 1a – BRT. These are expressed in yearly averages over the first decade of operation and exclude bus connections to districts.

Table 15-2: Operating Phase, Operational Costs

Elements of Operating Costs	$m, real terms, 2023 qtr1	
	BRT Solution	LRT Solution
Operation costs	34.86	33.94
Maintenance Costs	19.53	17.32
Contingency	5.44	5.13
Funding Risk Contingency	8.16	7.69
Total excluding contingencies	54.39	51.26
Total with all contingencies equ. P(95)	**$ 67.99m p.a.**	**$ 64.07m p.a.**

15.2 WHOLE OF LIFE COSTS

Operating phase capital expenditure required for the renewal of deteriorated assets were estimated at high level for the preferred option. These are based on conservative serviceable life assumptions of 40y for all fixed assets, 30y for LRT rolling stock and 20y for BRT rolling stock.

Operating phase capital expenditure required for the renewal of deteriorated assets related t the Do-Minimum were not assessed.

Net operating costs including capital expenditure are therefore over-estimated. This very conservative assumption is adequate at IBC level but will require further analysis at future stages, as PT Future fleets and operating models are refined by other stakeholders in the coming years.

The table below provides a breakdown of the operational and capital costs associated with the operation to Year 60 of:

- Option 1a – LRT
- Option 1a – BRT

Table 15-3:Breakdown of Operating Phase, Whole of Life Costs

Elements of Whole of Life Costs (60 years of operation)	$m, real terms, 2023 qtr1	
	BRT Solution	LRT Solution
Operation costs	9208.35	9156.52
Maintenance Costs	1093.51	969.84
Renewal costs	1185.18	1639.11
Contingency	1818.70	1846.55
Funding Risk Contingency	634.66	676.42
Total excluding contingencies	11487.05	11765.47
Total with all contingencies equ. P(95)	**$ 13,940.41m**	**$ 14,288.44m**

The anticipated cash flows for the project over its intended life span are as set out in the subsequent charts for each of the implementation options.

Table 15-4: Option 1a, LRT fleet

$m, real terms, 2023 qtr1	Y-5	Y-4	Y-3	Y-2	Y-1	Y0	Y1	Y2	Y3	Y4	Y5	Total
Property Costs	0.00	0.00	0.00	59.51	59.51	0.00	0.00	0.00	0.00	0.00	0.00	**119.03**
Project Development	27.47	27.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**54.94**
Pre-Implementation Phase	0.00	0.00	47.71	47.71	47.71	0.00	0.00	0.00	0.00	0.00	0.00	**143.14**
Implementation Phase	0.00	0.00	0.00	0.00	0.00	16.27	16.27	16.27	16.27	16.27	0.00	**81.35**
Physical Works	0.00	0.00	0.00	0.00	0.00	346.28	346.28	346.28	346.28	346.28	0.00	**1731.38**
Rolling Stock	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	182.80	0.00	**182.80**
Contingency	8.24	8.24	14.31	32.17	32.17	108.76	108.76	108.76	108.76	163.60	0.00	**693.79**
Funding Risk Contingency	12.36	12.36	21.47	48.25	48.25	163.15	163.15	163.15	163.15	245.41	0.00	**1040.68**
Total excluding contingencies	27.47	27.47	47.71	107.23	107.23	362.55	362.55	362.55	362.55	545.35	0.00	**2312.63**
Total with all contingencies (P95)	48.07	48.07	83.50	187.65	187.65	634.45	634.45	634.45	634.45	954.35	0.00	**4047.10**

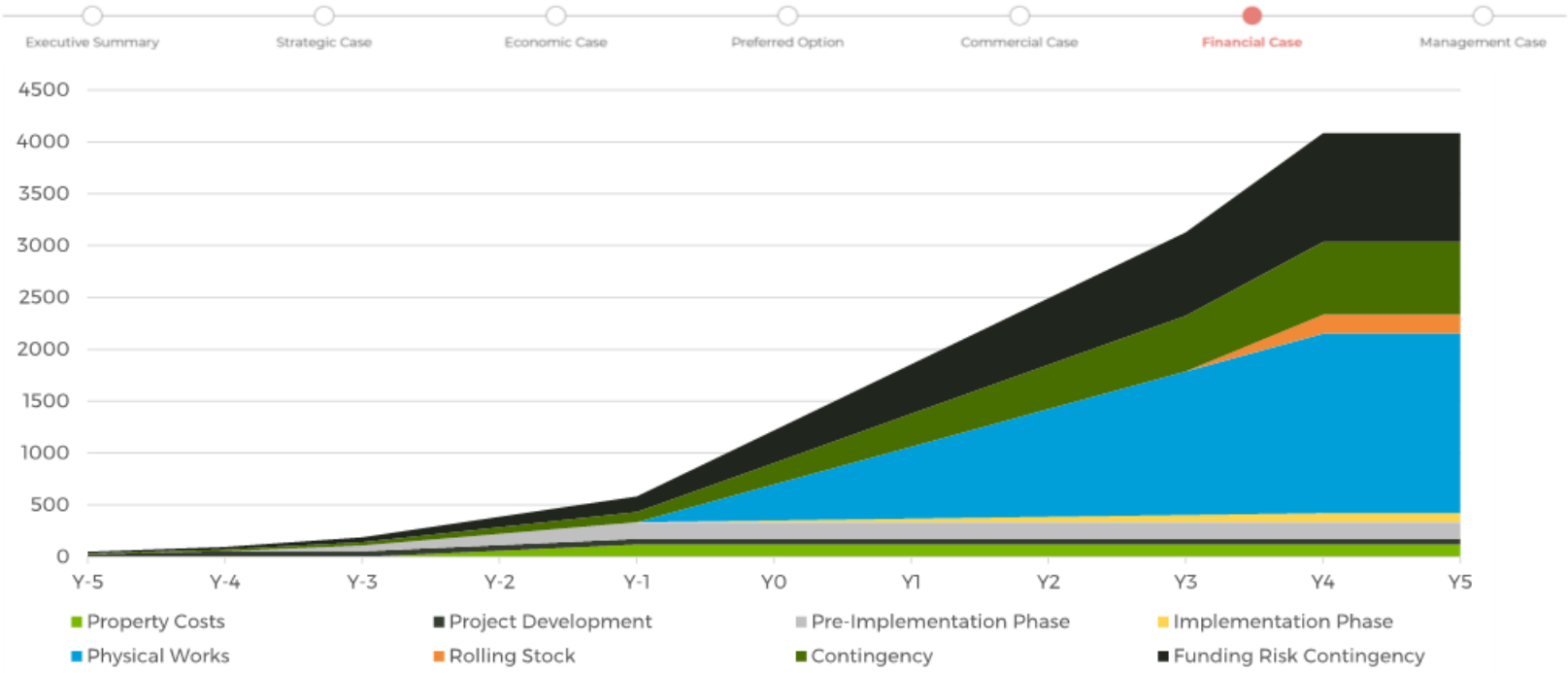


Figure 15-1: Cumulative cashflow for deliver phase of LRT fleet

Table 15-5: Option 1a, BRT fleet

$m, real terms, 2023 qtr1	Y-5	Y-4	Y-3	Y-2	Y-1	Y0	Y1	Y2	Y3	Y4	Y5	Total
Property Costs	0.00	0.00	0.00	59.51	59.51	0.00	0.00	0.00	0.00	0.00	0.00	**119.03**
Project Development	27.47	27.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**54.94**
Pre-Implementation Phase	0.00	0.00	34.80	34.80	34.80	0.00	0.00	0.00	0.00	0.00	0.00	**104.41**
Implementation Phase	0.00	0.00	0.00	0.00	0.00	12.01	12.01	12.01	12.01	12.01	0.00	**60.04**
Physical Works	0.00	0.00	0.00	0.00	0.00	252.36	252.36	252.36	252.36	252.36	0.00	**1261.80**
Rolling Stock	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	87.00	0.00	**87.00**
Contingency	8.24	8.24	10.44	28.30	28.30	79.31	79.31	79.31	79.31	105.41	0.00	**506.16**
Funding Risk Contingency	12.36	12.36	15.66	42.44	42.44	118.97	118.97	118.97	118.97	158.12	0.00	**759.24**
Total excluding contingencies	**27.47**	**27.47**	**34.80**	**94.32**	**94.32**	**264.37**	**264.37**	**264.37**	**264.37**	**351.37**	**0.00**	**1687.21**
Total with all contingencies (P95)	**48.07**	**48.07**	**60.91**	**165.05**	**165.05**	**462.64**	**462.64**	**462.64**	**462.64**	**614.89**	**0.00**	**2952.62**

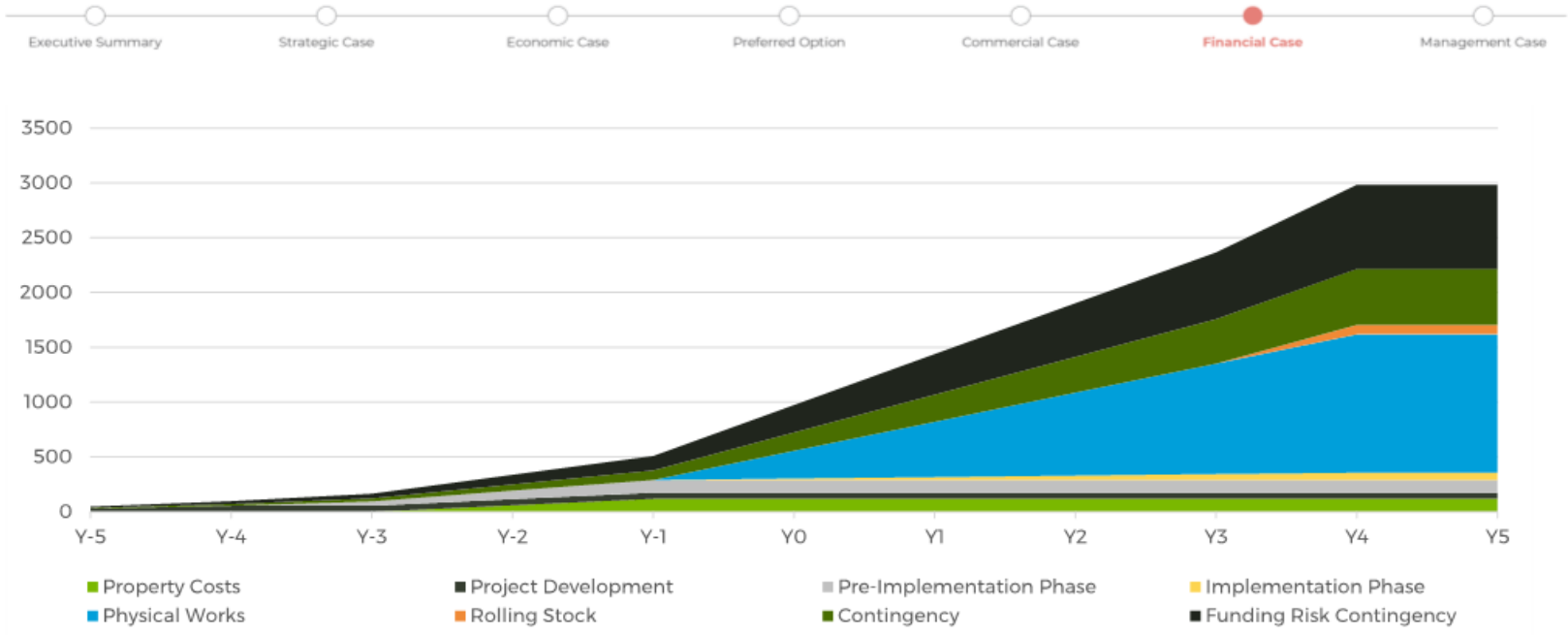


Figure 15-2: Cumulative cashflow for deliver phase of BRT fleet

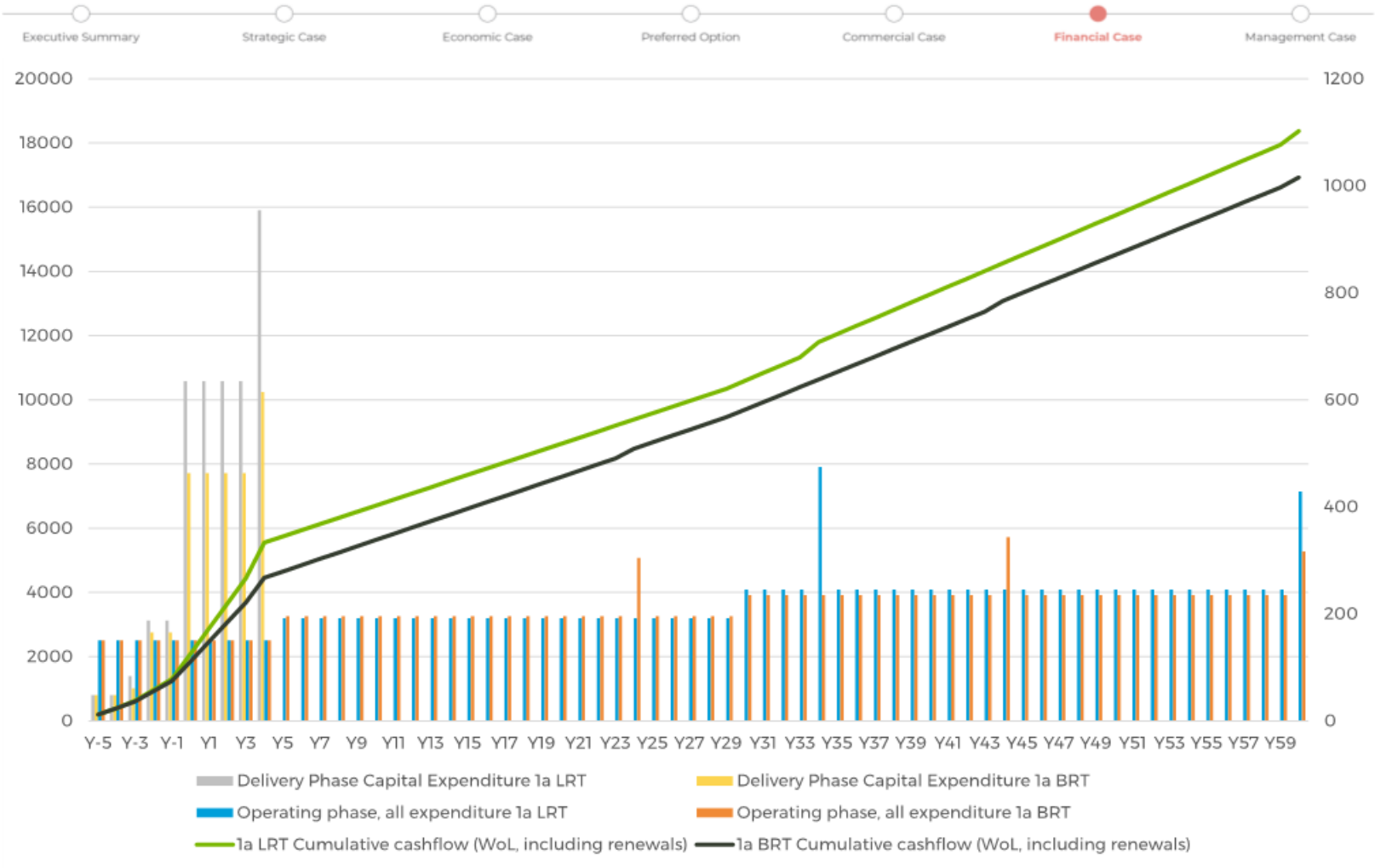


Figure 15-3: Cumulative cashflow for gross whole of life project for LRT and BRT

15.3 FUNDING APPRAISAL

The current assumptions are that part of the project would be funded through the National Land Transport Fund and part through funding from the Crown.

However, there is potential that additional funding may be secured through private sector investment – to be determined when examining procurement options and selecting a preferred method at DBC level.

Consequently, a funding model is recommended to be developed as part of the Detailed Business Case. This will inform a financial analysis and a funding analysis.

15.3.1 Indicative funding stream analysis

An indicative analysis of the costs related to Option 1 a allows the identification of financial commitments according to traditional splits for projects of this nature:

Delivery Agency Costs, including project development costs, and pre-implementation costs, and implementation phase costs. This stream of funding will have to be born by the organisation or organisations delivering the project.

Fixed Asset Owner Costs, includes all Physical Works costs and ongoing asset renewal costs. This stream will fund the final assets and therefore typically sits with the asset owner. In this case, with option 1a running through the local road network, it is assumed to sit with the City Council.

Fleet and Operating Costs, includes fleet purchase cost and operation costs as well as fleet whole of life costs. This stream relates to the farebox income and sits traditionally with the organisation mandated to provide public transport in the region. We note these includes Do-minimum operating costs related to PT Futures services' energy costs.

Using this high level analysis, Figure 15-4 below provides indicative estimates of cashflows per streams for Option 1a LRT for the period spanning the next Long Term Plan. It shows an indicative peak investment needed in FY32 of $939m.

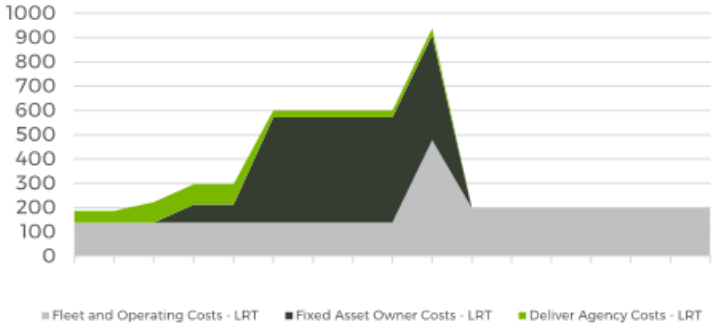


Figure 15-4: Option 1a LRT Funding Streams Cashflows - upcoming LTP period

Figure 15-5 below provides indicative estimates of cashflows per streams for Option 1a BRT for the period spanning the next Long-Term Plan. It shows an indicative peak investment needed in FY32 of $772m.

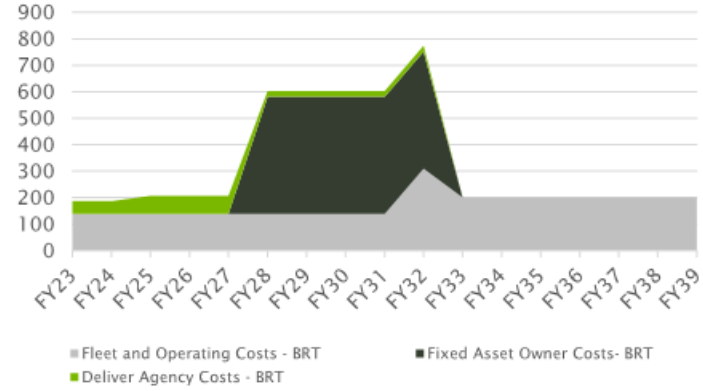


Figure 15-5: Option 1a BRT Funding Streams Cashflows - upcoming LTP period

Acknowledging the high level of uncertainty remaining at this IBC stage, it is possible to complete an early assessment of the cashflows by origin funds.

We note the below information is based on initial assumptions that are not validated. Extensive financial analysis and consultation at, and after DBC stage will be required to identify the most appropriate splits of funding streams for MRT.

Taking the initial assumption that Delivery Agency Costs, Fixed Asset Owner Costs and 50% of Fleet and Operating Costs will be borne by the Crown, through direct grant or via existing NLTF processes and existing FAR, the peak investment linked to Crown funds in FY32 is $700m for Option 1a LRT and $618m for Option 1 BRT. This means that a peak investment linked to Local Government funds in FY32 is $239m for Option 1a LRT and $155m for Option 1 BRT.

The indicative estimates of cashflows per origin of funds for Option 1a for the period spanning the next Long-Term Plan are provided in Figure 15-6 for LRT and in Figure 15-7 below for BRT.

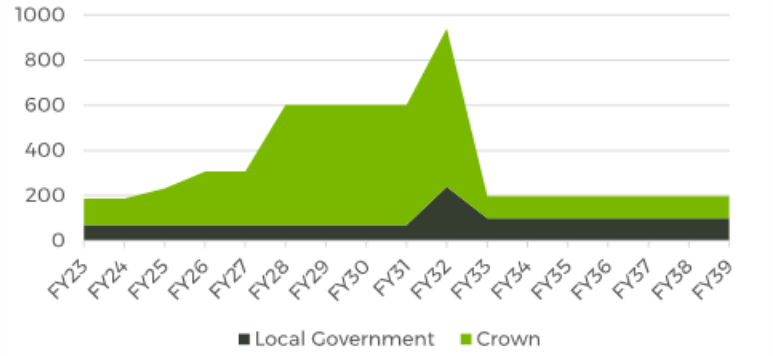


Figure 15-6: Option 1a LRT - Funding Cashflows by Origins

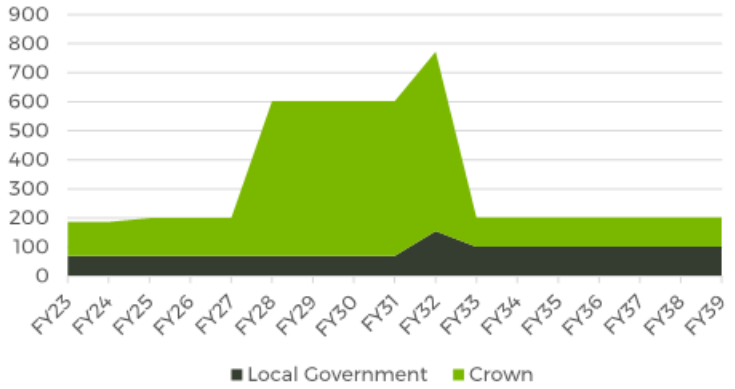


Figure 15-7: Option 1a BRT - Funding Cashflows by Origin

15.3.2 Financial consideration of next steps

The next steps of the project, detailed in the Management Case, will require the funding of Project Development Phase costs of $54.9m excluding contingencies. These include an estimated $12.7m of Waka Kotahi Managed costs and $42.3m of Consultancy Fees, all excluding contingencies, that will focus primarily on the Detailed Business Case activities.

A $15million funding request submission was made by Waka Kotahi in October 2022 to fund the start of the next stages of the Christchurch MRT project in the form of early Detailed Business Case activities.

Would this funding request be unsuccessful, additional funding approaches may include funding through the NLTF or mixed funding by key members of the Whakawhanake Kāinga Komiti (WKK).


MANAGEMENT CASE
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16 MANAGEMENT CASE

16.1 INTRODUCTION

This Management Case presents the arrangements that will be put in place for the successful delivery of the preferred option, both to ensure successful delivery and to manage programme risks. It covers:

- Management strategy approach and frameworks
- Governance arrangements, delivery roles and supporting agreements
- Staging, project development and Investment Management
- Early activities and workstreams
- Benefits realisation plan
- Next steps to address key risks and opportunities.

The Management Case responds to the proposed staging of the project in the medium to long term and sequencing of activities in the near-term.

The specific structures and methods outlined in the Management case respond to the risks and opportunities for the MRT project to ensure that the project progresses with certainty.

16.2 MANAGEMENT STRATEGY AND FRAMEWORKS

16.2.1 Timeframes and key considerations of the Management Case

The recommended management strategy and frameworks for the next phases of the MRT project are based on the following considerations.

- The works are expected to be delivered as part of a long term (10 yr) programme, developed in stages to manage uncertainties, constraints, and interdependencies over the lifecycle of the programme.
- Given the long timeframes, governance and management strategies will need flexibility to evolve as required by the project to address risks at each phase. The programme will initially utilise as many existing governance structures and frameworks as possible for the next phases, but these will need review in future stages for their suitability.
- This is a complex project due to being located in an established urban area, its scale and the number of parties involved. Specific examples of complex interfaces include:
  - The Governance structure and roles of the programme partners including Waka Kotahi, manawhenua, ECan, CCC, WDC and SDC.
  - A mix of rapid transit and local network improvements and impacts
  - Interrelated networks and infrastructure
  - Interaction with operations and PT Futures procurement
  - Multiple infrastructure asset owners
  - Multi-year (decade) programme
  - Uncertain and possibly multiple funding sources.

At the time of preparing this IBC the PT Futures programme has just received funding to commence the next stages of delivery. There is an opportunity to align and optimise both the PT Futures Programme and delivery of the MRT to ensure they are congruent.

16.2.2 Programme and business case assurance arrangements

Discussions around appropriate governance arrangements to deliver the next stages of the MRT Programme have commenced and will continue to agree an appropriate delivery structure for the Project. A governance structure/diagram has not been provided at this stage but will be available once delivery roles and responsibilities are clearly defined.

It is recommended the governance structure chosen reflects the attributes and needs outlined below.

Optimise existing governance structures and knowledge. In 2007 the Greater Christchurch Partnership (GCP) Committee was formed to enable a co-ordinated approach to urban planning and joint investment in transport across the Greater Christchurch region. This partnership included local government, manawhenua and Waka Kotahi. This Committee endorsed the co-ordinated PT Futures investment programme and recommended, to the respective Councils, to make provision for the recommended investment programme in their respective draft Long-term plans. This programme included the development of the MRT Business Case (this case) to determine the viability of MRT for the Greater Christchurch Region.

In 2022 the Whakawhanake Kāinga Komiti (WKK), an urban growth partnership was formed to support the GCP Committee's partnership with local government, central government (the Crown) and manawhenua. This committee will address existing challenges and position Greater Christchurch effectively for long-term growth while creating a well-functioning urban

environment that supports the decarbonisation of transport and improves resilience, housing affordability and accessibility. The MRT Project is a key project for the Whakawhanake Kāinga Committee.

Utilise existing Major Project Frameworks and Processes provided by Waka Kotahi- Waka Kotahi's End to End Project Management approach has been established to provide a consistent approach to governance, while allowing for project specificities, such as level of complexity and risk, to influence the degree to which the level of internal resource is scaled. In addition, it aims to maintain continuity of people in project roles throughout the life of the project, including the Sponsor. In the proposed Governance structure, it is anticipated that Waka Kotahi will provide additional support to the Project Steering Group.

Incorporate feedback from other similar Major Projects. Using existing structures and organisational knowledge will enable connections to similar projects nationally. Consideration should be given to specific connections and knowledge sharing avenues in the details of the structure as it is developed.

Reduce integration risk – this project has multiple complex-interfaces which need to be carefully managed to achieve a successful outcome. Using this structure will enable the Delivery Entity to liaise directly with WKK sharing timely information to inform decisions.

It is anticipated that the Governance and management structures will evolve and adapt for key stages of the project, to ensure successful outcomes as project delivery requirements change. Any changes may require adjustments to the integrated programme. These will be agreed and discussed with the Chief Executive Advisory Group (CE) for presentation to the Whakawhanake Kāinga Komiti (WKK). The WWK will make recommendations to the respective partner council's for consideration in future annual and long-term plans.

16.2.3 Programme management arrangements

It is proposed the next stages of the MRT Project will be managed using the project management methodology contained in Waka Kotahi's Project Management Manual's. These manuals outline:

- Governance and decision-making criteria
- Project planning
- Project execution
- Project completion and evaluation
- Reporting, Change Control and Risk Management Practises.

For infrastructure projects, a Project Sponsor and Project Director will oversee the project, in accordance with Waka Kotahi's delivery methodology. A project team will be established with relevant staff from across the organisation responsible for project delivery. The Programme Manager will be responsible for regular reporting updates to the Project Steering Group.

16.2.4 Programme Roles and Responsibilities

Table 16-1 below describes each partners role and responsibility for the Project. In addition to the roles listed in the table they all have a governance role as a Participant in the Whakawhanake Kāinga Komiti to support delivery of MRT outcomes. This governance role will include actively participating in the programmes oversight and communicating and engaging programme information with the organisations they represent.

Table 16-1: Programme Roles and Responsibilities

Partner/Organisation Overarching Role	Responsibilities and Considerations in the Detailed Business Case Phase
Waka Kotahi: Waka Kotahi is a key investor in the transport system through co-investment in transport projects. Their role within this programme will be to lead the Delivery Entity, providing programme management to deliver the programme.	▪ Managing the relationship with Crown / Cabinet ▪ Providing project delivery and management, implementing Waka Kotahi frameworks and processes ▪ Consenting Strategy and Implementation ▪ Property Acquisitions (in partnership with KO and Local Authorities) ▪ Provides potential funding of subsequent phases with contribution from the other partners.

Partner/Organisation Overarching Role	Responsibilities and Considerations in the Detailed Business Case Phase
Manawhenua: Mahaanui Kurataiao have set out the interests in, and position of, manawhenua on the project.	▪ There is an opportunity through the DBC to confirm manawhenua partnership roles and responsibilities and how and their interests can be reflected in the governance structure and the development and delivery of MRT in the future.
Ministry of Transport: MoT is the government's principal transportation policy advisor. Working with other government agencies, local authorities, interest groups and transport operators to realise opportunities, mitigate the risks and ensure the transport system improves wellbeing and liveability.	▪ Provide guidance and strategic policy advice during the development and refinement of the business case and integration with the wider transport systems. MOT is currently investigating opportunities that may exist to co-ordinate/deliver MRT/Rail Systems at a national level across New Zealand. Future stages of this project will take into account any result of the MOT investigation available at the time.
Christchurch City Council: CCC is responsible for public transport infrastructure and for managing the local road network in Christchurch as well as land-use planning, district plan development and enforcement.	▪ Responsible for long-term strategic and spatial planning including rapid transit corridors. ▪ Ensure link of MRT planning to long-term plans and spatial strategies by working with partners. ▪ Support consenting processes and frameworks. ▪ Provide input and guidance on network planning and integration with wider network, as required. ▪ Ensure PT Futures Infrastructure is congruent with MRT design philosophy ▪ Integration with LTP projects and assets ▪ Delivery of supporting infrastructure/projects to enable MRT benefits ▪ Digital/operational systems SCATS ▪ Enforcement of MRT lanes including operations and technology and disruption during construction. (Details of roles and responsibilities to be confirmed) ▪ Provides potential funding of subsequent phases with contribution from the other partners. ▪ Deliver Master Planning for Hornby
Environment Canterbury: ECan is the lead agency responsible for the delivery of public transport within Greater Christchurch.	▪ Provide input and guidance on public transport planning and integration with broader PT services. ▪ Provide guidance on interdependencies with inter-regional rail and other transport providers. ▪ Ensure PT Futures service design in congruent with MRT. ▪ Responsible for fare strategy, timetables, MRT operational systems, collection, etc. (including ticketing system). ▪ Provision of supporting feeder buses, temporary bus routes during and post any construction or disruption in the community. ▪ Potential MRT ownership responsibilities (Noting depending on the mode decision and the replacement of the Public Transport Operating Model (PTOM) with the Sustainable Public Transport Framework (SPTF) - ownership could be with an operator or ECan):

Partner/Organisation Overarching Role	Responsibilities and Considerations in the Detailed Business Case Phase
	▪ Procurement of vehicles ▪ Procurement of depot sites and facilities ▪ Procurement of some or all station/stops/interchange sites and infrastructure ▪ Service design and planning, including integration with the wider network ▪ Customer interfaces, including branding, information and ticketing.
Waimakariri District Council: WDC is the asset owner and responsible for managing the local transport system, including public transport facilities and infrastructure in the Waimakariri District.	▪ Responsible for long-term strategic and spatial planning for WDC. ▪ Provide input and guidance to infrastructure and alignment with the PT Futures programme and MRTWDC roles and responsibility with be further developed through the DBC as the infrastructure and service offerings to Waimakariri are refined. ▪ Provides potential funding of subsequent phases with contribution from the other partners.
Selwyn District Council: SDC is the asset owner and responsible for managing the local transport system, including public transport facilities and infrastructure in Selwyn District.	▪ Responsible for long-term strategic and spatial planning for the SDC. ▪ Provide input and guidance to infrastructure and alignment with the PT Futures programme and MRT. ▪ SDC roles and responsibility with be further developed through the DBC as the infrastructure and service offerings to Selwyn are refined ▪ Provides potential funding of subsequent phases with contribution from the other partners.
Kāinga Ora: works closely with other government agencies tasked with delivering public housing and support services for New Zealanders.	▪ Ensuring that planning and design stages allow for optimised urban development. ▪ Provide development planning and consenting expertise. ▪ Jointly develop land acquisition strategy. ▪ Potential to utilise the UDA to acquire land adjacent to stations and transport corridor to drive desired densification. ▪ Potential to facilitate strategic land acquisition for the project in coordination with Waka Kotahi
KiwiRail: own and maintain the national rail network infrastructure.	▪ Provide input and guidance on network planning and integration with wider heavy rail network, as required. Specific areas that will require KiwiRail's input are: ▪ Riccarton Road Level Crossing ▪ Hornby Master Planning (due to Main South Line & Hornby)

16.2.5 Agreements required to give effect to governance

As an early action, the governance should identify any agreements already in place that are relevant or new agreements that may be required to give effect to the governance structure and project delivery outcomes.

These could include addressing issues such as:

- Agreement on outcomes and decision-making principles
- Responsibilities and collaboration
- Connections and cross-project integration
- Communications and engagement
- Dispute resolution and escalation
- Funding and financial processes and arrangements
- Managing and allocation of risks.

Physical Ownership/responsibility of new assets.

16.3 STAKEHOLDER COMMUNICATION AND ENGAGEMENT PLANNING

The stakeholder and community engagement undertaken to date has been detailed in Section 9.5 of the IBC. In summary, during the development of the IBC, engagement has been held across partners and key stakeholders by way of briefings and workshops. In October 2022, the Project commenced wider stakeholder and community engagement under the Greater Christchurch Urban Growth Work-Programme, including an online public survey regarding the Greater Christchurch Spatial Plan and potential for Mass Rapid Transit. This was initially undertaken through Focus Groups (Phase 1) which then led to public engagement in February 2023 (Phase 2).



Figure 16-1: Communication and Engagement Phases.

To date, this Project and the GCSP have aligned communication and engagement timelines that has allowed for a single engagement plan. However, at Phase 3, the two programmes of work will have different communication and engagement objectives. It is recommended at the earliest stage possible in the DBC that a detailed stakeholder communication and engagement strategy is developed and then implemented. Stakeholder communication and engagement in the DBC phase of the Project will focus on opportunities to 'consult' and involve' communities and stakeholders

16.4 PROJECT NEXT STEPS

Section 10.1.5 within the Commercial Case outlines the scope for the Detailed Business Case, the next logical step for this Project. Early strategic pieces of work that will de-risk the delivery of the DBC have been identified. These are shown in Table 16-2. The scope and justification for expediting these early pieces of work to manage key risks and support critical decision making are presented in the following table. It also includes Figure 13-21 Potential Staging Pathway which provides a possible way forward for the early works and the multi-year delivery programme of the MRT Project.

Table 16-2: Early Strategic Pieces of Work

Key Activity	Scope	Risks mitigated	Questions answered	Timeframe / Lead
MRT Project Management and Delivery Setup	This activity will provide further clarity around the project team and definition of project roles, responsibilities and key deliverables. It will also allow for early clarification around an agreed Governance Structure, including working closely with manawhenua. In addition it will also allow for further development of the programme to deliver Horizon 1 tasks and confirmation of funding.	IP loss /Sub-par decision making based on flawed understanding of the IBC's conclusion/Silo decisions by partners	What is the DBC Programme? What are the key roles/ risks/ responsibilities/ to be transferred to WKK partners as the project integrates with PT Futures and wider planning initiatives? What are the possible funding streams for the project? What are the broader engagement and communications strategies required to transfer the project to a DBC phase? What are the Te Ao Māori inputs and collaborations needed to prepare for the DBC? How are the key MRT risks and mitigations evolving?	Ongoing until DBC is procured, and Project IP is transferred to suppliers. The current arrangement is that Waka Kotahi leads this stream.
PT Futures Integration: Optimisation of PTFutures based on the outcomes of the MRT IBC.	There has already been an announcement by the Ministry to accelerate PT Futures. CCC, SDC, WDC and ECan have already initiated investment into some of the next steps. However, there are number of proposals that conflict with the now proposed MRT route that will need refinement prior to investment including: Bus Route changes Bus priority infrastructure Bus stop locations/shelters Park and ride	Links to mitigating PT Futures Integration risk. (Ref Risk ID 2052-16) Risk that misaligned services and infrastructure improvements originally proposed by PTFutures are not aligned with MRT and if progressed will lead to redundant investment.	What projects identified under PTFutures can continue to be progressed as part of their accelerated programme, need to go on hold or need to be adjusted as a result of the MRT proposal? For those components that need adjustment what optimisation is proposed? Which projects continue under PT Futures delivery programme and which are implemented as part of MRT?	Start immediately to input into ECan/ CCC/ SDC/ WDC acceleration of PT Futures. Maintain along MRT delivery and transfer to operating client. Following on the current arrangement, Waka Kotahi would lead this stream.
Land Use Integration Study: As	This scope will enable consideration of the need for wider master planning beyond	Links to mitigating Greater ChCh Intensification risk (Ref Risk ID 2052-08)	What tools and levers are available and will be implemented to provide certainty and	To start mid-year following completion of GCSP and hearings process for PC14.

Key Activity	Scope	Risks mitigated	Questions answered	Timeframe / Lead
described in the IBC Management Case. In addition to LUI items above	Hornby and PDA's for the central city, Papanui and Riccarton such as Church Corner and Sockburn (in collaboration with other partners). This will create greater certainty around land use and urban development outcomes along the corridor.	Risk that misaligned LU decisions erode MRT's value proposition. Imperative that growth and density is achieved at the right level and quality at key centres along the corridor.	guide growth and density at key centres and along the corridor? Are wider neighbourhood master plans required to promote catalyst development in support of MRT and the different role and function of centres?	Following on the current arrangement, Waka Kotahi would lead this stream. Future arrangements to be confirmed by governance, may see Waka Kotahi contribute to CCC led activities.
Network Integration Study: An integration of MRT with the network as a whole, inc. programmed projects, active mode integration, urban amenity, operation and broader impacts on the wider transport network and neighbourhoods.	While initial work has been undertaken to understand the potential impact on the capacity of the roading network, impacts and potential mitigations need further consideration. This process may highlight the extent of impact resulting in additional projects beyond the MRT corridor. This work will enable WK to work in collaboration with CCC to confirm the One Network Framework aspirations for the corridor, including confirmation of the 'place and movement' vision and the 'low traffic zones' within impacted neighbourhoods, providing certainty around future street allocation.	Links to mitigating Project Interface/Complexity risk, Network Operations risk and Accessibility risk. (Ref Risk IDs 2052-07, 2052-21, 2052-23) It will reduce the risk of investing in planned projects which then need rescoping or become redundant as a result of MRT. Will allow deeper understanding of extent and quantification of network and neighbourhood implications to enable scoping of master plans and neighbourhood plans. Establishing an urban design framework as part of the Integration Study to identify neighbourhood opportunities and impacts as a result of land use change and intensification ensuring legible, high amenity outcomes that	<u>Programmed Improvements:</u> Which projects have planned improvements (LTP, Activity Management Plans, RLTP, NLTP) in that align with the MRT corridor? Planned changes that may need to be deferred or changed to be able to accommodate MRT. <u>One Network Framework:</u> How does the proposed MRT corridor fit in with and influence the One Network Framework and overlap with PDA's and Master Plans? When and how are these decisions made? What input is required from the MRT project team? <u>Extent of Impact:</u> What extent of network changes (beyond the MRT corridor) might be required to enable implementation of MRT while supporting of network function such as residential access, service and delivery access and low traffic volumes local neighbourhood areas? <u>Active Modes</u>: What are the constraints and opportunities associated with integrating cycle and micro mobility with the MRT station? How does this inform the current planning underway to connect further the major cycle routes with the local cycleway network?	To start immediately to inform programmed projects and allow deeper understanding of extent and quantification of network implications to better inform scoping of the DBC stage. Following on the current arrangement, Waka Kotahi would lead this stream. Future arrangements to be identified as other PT Futures programmes are delivered, may see Waka Kotahi contribute to CCC led activities.

Key Activity	Scope	Risks mitigated	Questions answered	Timeframe / Lead
		maximises accessibility to MRT.		
LUI - Priority Development Areas (PDA) within Central City, Papanui, Riccarton and Rolleston	This scope will enable WK to be a key partner/collaborator in development of the PDA workstream, influencing actions/outcomes for the key centres along the MRT corridor. This will ensure consideration of the right urban development and density outcomes supportive of MRT. This will provide greater certainty that necessary catalyst development and intensification/density will occur at key locations, enabling greater confidence in the opportunity for urban uplift. It will also ensure the right mechanisms are in place to support and incentivise growth to key centres/station locations.	Links to mitigating Greater ChCh Intensification risk and Project Interface/Complexity risk (Risk Ref IDs 2052-08 2052-07) Risk that misaligned LU decisions erode MRT's value proposition. Imperative that growth and density is achieved at the right level and quality at key centres along the corridor. Risk that misaligned actions and outcomes including infrastructure and property investment are not aligned with MRT outcomes and if progressed will lead to redundant investment and underdevelopment.	Which properties are opportunities for comprehensive redevelopment that will comprise catalyst development and how do they relate to future station locations and improve accessibility to MRT? What land uses are proposed and how will these support mixed use outcomes and contribute to the urban amenity of the corridor? Will the development sites enable creation of exemplary urban development (scale and typologies) for developers to follow suit?	Start immediately to work with key partners to scope and contribute to PDA's aligning with the key centres along the corridor. Following on the current arrangement, Waka Kotahi would lead this stream. Future arrangements to be confirmed by governance, may see Waka Kotahi contribute to CCC led activities.
LUI - Hornby Master Plan	This scope will enable WK to lead the integration of key transport decision making and influence the urban outcomes considered necessary to support MRT. It will involve representation on Master Planning project team and lead agency for Programme Business Case for Freight and SH1 network realignment project. There is necessary to resolve a series of issues and constraints and enable the DBC to be more focused.	Links to Hornby Network Interface risk and Project Interface/Complexity risk. (Risk Ref IDs 2052-18, 2052-07) LU and urban design solutions for the centre are inconsistent with urban amenity, accessibility and value proposition outcomes sort for MRT. Property availability & affordability erodes with time and excludes	Where is the future centre of Hornby in order to know what the options for station location are? Where can the station be located so it does not conflict with SH and Rail corridors or effect their LOS? Where is a potential depot site that does not undermine town centre regeneration and urban development opportunities within the walk-up catchment? What are the future land uses that will align with the corridor influencing corridor and wider street design?	Begin input into a collaborative process late 23/early 24 given it will take some time to resolve the key issues. There is benefit in progressing key aspects of this work programme immediately. Following on the current arrangement, Waka Kotahi would lead this stream. Future arrangements to be confirmed by governance, may see Waka Kotahi

Key Activity	Scope	Risks mitigated	Questions answered	Timeframe / Lead
		provision of depot sites for BRT/LRT options. Land value uplift benefits erode with time.		contribute to CCC led activities.
Property Protection Study: starting with establishing a Strategy in coordination with WKK Partners.	This scope includes development of Property Protection and Acquisition Strategy, Land value and uplift studies. It will involve review and alignment with preliminary work already completed around the preferred option with new information, as available. This study will also support the Priority Development Area Strategy.	Links to Corridor Protrection ad Propoerty acquisition risk (Risk Ref ID 2052-19) Risk that property availability & affordability erodes with time. Risk that land uplift benefits erode with time.	Which properties will need to be acquired to enable the preferred option and are they available? What levers will be put in place to acquire the right properties and enable appropriate development outcomes? What properties best align with achieving wider urban amenity outcomes at centres and along the corridor? What is the appropriate acquisition strategy and how is this influenced by the designation process and changing legislation?	Can start in FY24 but needs LUI and NI studies to start first. PDA's may also influence the strategy. Following on the current arrangement, Waka Kotahi would lead this stream. Future arrangements to be confirmed by governance, may see Waka Kotahi contribute to CCC led activities.
MRT Service and Technology Integration Study: Determines and refines the service and technology boundaries	Despite different vehicle types being required between PTFutures and MRT, fleet technology considerations should be considered to ensure an integrated approach to operations and whole of life cost (OPEX/CAPEX), energy provisions and supply chain studies. This will also help inform PTFutures and form valuable input to the mode decision to be made at DBC stage.	Links to Technology Changes risk (Ref Risk ID 2052-12) Risk that misaligned Services and fleet decisions by others erode MRT's value proposition. Completing this study early with introduce opportunities for future stages.	If ECan purchase a vehicle fleet to service the acceleration of PT Futures acceleration, what is the best technology considering likely expansion to MRT in the future and long terms decisions around energy?	Start immediately to input into ECan's acceleration of PT Futures. Maintain along MRT delivery and transfer to operating client. Following on the current arrangement, Waka Kotahi would lead this stream. Future arrangements to be identified as other PT Futures programmes are delivered, may see Waka Kotahi contribute to ECan or CCC led activities.

16.5 CHANGE MANAGEMENT PLANNING

The recommended programme is informed through several key assumptions that could change over the duration of the programme. The governing body should regularly monitor any changes in key assumptions, which may result in a trigger for change, as outlined in Table 16-3.

Table 16-3: Recommended programme triggers for change

Aspect	Key Assumption	Trigger for Change
Population growth	As New Zealand's second largest and one of the fastest growing regions, Greater Christchurch's 2021 population of 499,000 is projected to grow to over 655,000 by 2051. This equates to a population growth rate of around 31% and translates to approximately 64,000 new households in Greater Christchurch by 2051.	Consider altering the recommended programme if population growth rate differs from the assumed forecast.
Employment growth	Employment is forecasted to grow by approximately 47% between 2021 and 2051, from 244,450 to 359,068. In total, an additional 114,618 employment opportunities are projected by 2051, with most of these (71%) within Christchurch City.	Consider altering the recommended programme if employment growth rate differs from the assumed forecast.
Land use integration and development	Land use policy nationally and locally is under review and has the potential to impact on the location of growth and intensification and the ability to achieve land use integration benefits arising from investment in MRT. This includes the Natural and Built Environment Act, Plan Change 14 and the Greater Christchurch Spatial Plan.	Consider changes to land use policy to that currently set out in the IBC, i.e. if the NBEA changes the built form outcomes aligning with rapid transit stations, PC14 is not adopted and the Greater Christchurch Spatial Plan outlines growth and intensification away from the preferred corridor. Monitoring of resource consents for development along the preferred corridor to track land development outcomes.
Integrating with other initiatives	Road network infrastructure improvements included within TLAs Long Term Plans (and the Waka Kotahi National Land Transport Programme), PT Futures and other identified projects likely to achieve funding, as agreed for the CTM/CAST v21 model update.).	Consider changes to the recommended programme should any future initiatives not identified in the Do-Minimum be prioritised. For example, policy direction that relates to central city parking, public transport fares or emission reduction policies.
Patronage numbers	The recommended option is expected to increase annual PT trips by 5.7 million trips per year by 2051 (growing at a 4.8% annual average rate from 2021 to 2051).	Consider altering the recommended programme if patronage growth rate differs from the assumed forecast.

16.6 BENEFITS MANAGEMENT PLANNING

The ILM workshop developed a number of KPIs for the programme. The intention is that KPIs will be used, during and following the implementation of the programme, to assess whether the programme is achieving the desired benefits.

A Benefits Realisation Plan (BRP) has been prepared for the MRT project (see Appendix V – Benefits Realisation Plan). The BRP maps the identified problems and investment objectives for the sub-projects to performance measures that can be used to test how the objectives are being met. This ILM mapping is shown in Appendix A – Investment Logic Map.

The BRP includes the proposed methodology for performance measure capture, baseline data and expected results.

The performance measures provide a framework for post-implementation monitoring. The BRP is a living document that will be reviewed and updated over time as required to remain current with the delivery of the programme.

The benefit realisation of earlier phases is one of many factors to consider in terms of investment in the future phases. There are overlaps between investment driver measures proposed to support the gateway reviews and associated monitoring and reporting, and those that are included in the BRP. This is a potential synergy.

To ensure effective management of the benefits realisation monitoring process, benefits management should be included in the governance and delivery management plans of the project. The BRP includes responsibility for monitoring and measurement of indicators and these responsibilities shall be included in the specific roles and responsibilities in the governance model as it is developed.

The KPIs developed at the workshop have been further refined as performance measures to make them more specific to the investment. These performance measures are set out in Appendix A – Investment Logic Map.

Table 16-4 below provides details on the performance measures, including proposed methodology for capture, baseline data and expected results.

It is expected these measures will be further refined in the next stage during the detailed business case development.

Table 16-4: Performance measures for the PT Futures Mass Rapid Transit Project (MRT) IBC

Measure	Linked KPI (ID#)[3]	Method[4]	Time of Measurement	Baseline	Expected Result
Change in the number of households able to access the Christchurch City within 30 minutes end-to-end travel time using the PT system	1	Baseline existing in-vehicle journey time for MRT (using ECan's Power BI GPS data) and current household census data to confirm the number of households located within a 30 min end to end travel time system. Measure: Average MRT journey time over a week to determine the 30-minute travel catchment. Changes in households: Census data of the changes in population within the 30 minute travel catchment area	5 yearly (Census year)	Current Census data / current network	Accessibility to the city centre improves across the locations with both the short- and medium-term improvements.
Change in number of people/households within 800m of a MRT station.	1, 2	Use the Census data to determine the number of residents within households located within 800m of the route.	5 yearly (Census year)	Current Census data	Increase in the number of people living within 800m of a station.

Measure	Linked KPI (ID#)[3]	Method[4]	Time of Measurement	Baseline	Expected Result
Change in the proportion of trips made by PT to the Central City.	1, 7	Refer to the mode shift split for Greater Christchurch from the census data and taken from monitoring data for Waka Kotahi's Mode Shift Plan for Christchurch.	5 yearly (Census year)	Current Census data	Increased proportion of trips in Greater Christchurch made by PT..
Change in number of additional jobs within 800 m of an MRT station.	2	Baseline employment location numbers from census data. Number of jobs located within the 800m of an MRT station taken from census data.	5 yearly (Census year)	Current Census data / current network data (Power BI)	Accessibility to employment opportunities increase across Greater Christchurch.
Change in number of households able to access additional KAC and strategic land uses (hospital / university / airport) within 30 minutes by PT.	2	Baseline existing in-vehicle journey time for PT (using ECan's Power BI GPS data) and household census data to confirm the number of households located within a 30 min end to end travel time system. Measure: Average PT journey time over a week to determine the 30-minute travel catchment. Changes in households: Census data of the changes in population within the 30minute travel catchment area	5 yearly (Census year)	Current Census data / current network data (Power BI)	Increases in number of households able to access additional KAC and strategic land uses.
Change in number of employment opportunities within 30 minutes by PT in Greater Christchurch	2	Baseline employment location numbers from census data. Measure: Average PT journey time over a week to determine the 30-minute travel catchment Number of jobs located within the 30-minute catchment taken from census data.	5 yearly (Census year)	Current Census data / current network data (Power BI)	Accessibility to employment opportunities increase across Greater Christchurch.
Change in proportion of trips made by PT along mass transit corridor(s) to the central city.	4	Using boarding information from MRT Operator and population data as per the Census determine the number of PT trips made per capita.	5 yearly (Census year)	Current Census data and existing MRT boarding information for relevant year.	Increase in annual PT trips following implementation of the short-term option and a further increase following the medium-term recommendation.

Measure	Linked KPI (ID#)[3]	Method[4]	Time of Measurement	Baseline	Expected Result
Change in the in-vehicle journey time along a specific route for PT compared to general traffic (prioritised Christchurch locations to Christchurch City)	5	Baseline existing in-vehicle journey time for PT (using ECan's Power BI GPS data) along specific MRT route and compare to general traffic data (using Tom Tom or bluetooth CTOC data).	Should be measured following implementation of the short-term solutions (Years 1-6) and the medium-term solutions (Years 7-10).	Current Census data / current network operation data from Power BI	Car journey times remain relatively consistent with the implementation of MRT.
Change overall PT mode share in Greater Christchurch.	6	Refer to the mode shift split for Greater Christchurch from the census data and taken from monitoring data for Waka Kotahi's Mode Shift Plan for Christchurch.	5 yearly (Census year)	Current Census data	Increased proportion of trips in Greater Christchurch made by PT.
Change in the greenhouse gas emissions (CO_2) from all transport sources within Greater Christchurch.	7	Baseline environmental measurements of greenhouse gas emissions from selected key locations along core routes. Once baseline quantitative data is gathered, implement monitoring plan to regularly measure changes in key indicators over the life of the project.	Bi-annual measurements following implementation of the short-term improvements	Should be measured prior to construction start.	Very little reduction in emissions compared to the base data (despite the reduction in total vehicle kilometres travelled per capita).
Change in the air pollution from PM10 and NO_2 within Greater Christchurch.	7	Baseline environmental measurements of air pollution (PM10 and NO_2) gas emissions from selected key locations along core routes. Once baseline quantitative data is gathered, implement monitoring plan to regularly measure changes in key indicators over the life of the project.	Bi-annual measurements following implementation of the short-term improvements	Should be measured prior to construction start.	Minimal change anticipated.

16.7 CRITICAL RISKS TO THE PROJECT

Two risk workshops were held to identify risks to implementing the Preferred Option. Further work was completed to quantify identified risks and choose appropriate mitigations and controls, the full risk register for the Preferred Option is included in Appendix W.- Project Risk Register. Risks with a 'critical' rating are presented in Table 16-5 below, in addition a 'high' risk around governance structures is also included as it relates to the governance structure included in this management case. These risks could lead to the programme not being fully delivered or result in a delay to the implementation timeframe of the programme if left unmitigated or controlled.

The controls column describes activities and steps that have been identified to mitigate and manage the associated risk. None of these risks pose a threat that prevent the programme from proceeding to the next phase. However, ensuring these (and any other identified) risks remain sufficiently mitigated will be a key component of the CEAG's oversight role. The Management and Commercial Cases respond to these risks through governance, the scoping and sequencing of next stages and implementing the Benefit Realisation Plan (BRP)

Table 16-5: Risk management planning

Risk Identifier	Risk Description	Risk Cause(s)	Controls	Current Risk Level (without control)
2052-07	**Project Interface/Complexity** Complex known and unknown interfaces exist for this project. There is a threat interfaces and/or dependencies force changes to this project or the project forces changes to surrounding services and infrastructure.	Known interfaces at the IBC Stage include: '-Integration with wider city shaping policies and planning (PC14, Traffic Plans) - Integrating with existing central bus exchange and around transit malls, Ecan Bus Routes. - Integration with existing utilities and services. - Broader levers being proposed to support mode shift e.g. parking policies. - Staging/phasing of the project may not integrate with the existing bus network or may trigger additional scope/projects. - Neighbourhood Planning/Cycling Strategies business cases/strategies - Hornby Master Planning - station locations and MRT integration. - GTP Government Transport Partners.	- Suggested early investigations as part of the DBC to better understand and mitigate existing and potential future project interfaces. - Next stages of DBC to complete Utilities assessments/site investigations workstream. - Use of existing governance model with high levels of engagement from all partners.	**Critical**
2052-08	**Greater Christchurch Intensification** To meet key objectives the project is reliant upon urban intensification to occur within the MRT corridor. There is a threat that intensification doesn't occur in the manner (scale, location, form) needed to	This is caused by: -. MDRS and NPS-UD policy, which are to be included in PC14 (CCC) enabling greater housing supply than demand for the next three decades. -. Possible qualifying matters on the MRT corridor. -. Intensification across the whole city, intensification does not occur within the MRT corridor. -. Revisions to airport noise Contours (CIAL 50dB noise contours) could reduce intensification within the MRT route and/or station catchment areas.	Land use Integration and Intensification framework study is recommended as an early piece of work in the DBC.	**Critical**

Risk Identifier	Risk Description	Risk Cause(s)	Controls	Current Risk Level (without control)
	support MRT and project objectives.	-. Existing services (e.g. wastewater, water supply) do not have sufficient capacity to support the urban development. Lower risk, checked by Greater Christchurch Spatial Plan.		
2052-06	**Social License/Stakeholder Engagement** There is a threat the general public/ local communities/ key stakeholders may not support the proposed solutions or objectives for the project.	- There has been limited public engagement on the MRT concept to date. - Engagement is being completed late in the IBC phase after the preferred way forward has been selected. - Stakeholder may be missed as haven't been identified. - There could be significant disruption and changes to adjacent landowners access. - Cost/timeframe priority misalignment.	- Develop and revise master list of stakeholders and stakeholder engagement strategy for feedback received from engagement during the IBC stage. - Engagement with stakeholders and the community to be undertaken as part of the next planning stages to give people an opportunity to help shape the project.	**Critical**
2052-10	**Resourcing - Capability & Capacity** There is a threat appropriate capability and capacity many not be available to deliver the project.	- Length/complexity of project - Wider industry capacity, given other key transport projects planned across the country - Supply chain disruption - Includes operators, specialised staff - are they available in NZ, technology	- Investigate opportunities to share IP and resources with other key transport projects across the country during the DBC phase. - Capture lessons learnt from PT Futures Programme delivery/other projects. - Ability to be first project off the ranks.	**Critical**
2052-18	**Hornby/Freight Network Interface** There is a threat MRT may force significant changes to the existing freight state highway and/or rail network at Hornby.	This is caused by: - Proximity to existing State Highway and priority freight network (e.g. Main South Road) - Area is already very established with major routes already in place.	- Use sensitivity testing to check scenarios. - Costings to include work to integrate freight network. Scoping to assess and review appropriate treatments. - Early piece of work suggested to do a deep dive on this.	**Critical**
2052-19	**Corridor Protection/Property Acquisition** The preferred corridor is not currently protected but has been publicly announced. There is a threat the corridor (and or property to enable the preferred option) cannot be acquired.	- Property acquisition and corridor protection has not yet been confirmed. - Depot sites/park and ride facilities have not been identified or planned - Additional Property may be required to ensure intersections are safe and meet appropriate standards. - Hornby Master Planning may identify changes to Property requirements	- Engage with KiwiRail around Hornby freight lines. - Property acquisition plan to be created.	**Critical**
2052-21	**Network Operations** There is a threat the preferred option may significantly impact network operation and	- The impact of right hand and U turns restrictions along the corridor. - Integration with one-way system (vehicles may have to turn across MRT/Bus Lane to access properties).	Network integration study at the start of the DBC to identify integration challenges and opportunities.	**Critical**

Risk Identifier	Risk Description	Risk Cause(s)	Controls	Current Risk Level (without control)
	requirements forcing fundamental changes to scope and route alignment in future stages.	- The proposed corridors for the frequent stop street running scenario are largely only 20m in width, requiring substantial road-space reallocation. - Removal of on-street parking, loading zones for delivery of goods. - Integration of cycleways. - Centre located stop infrastructure. - Crime Prevention Through Engineering Design (CPTED) Assessment. - Safety in design assessments.		
2052-23	**Accessibility** There is a risk the MRT system may reduce accessibility for specific community members to key activity centres and locations.	- Parking along the corridor route will be removed. - Kerbs and channel heights may have to increase to align with rail infrastructure. - One-way streets (vehicle have to turn across MRT lane to access properties - Transit malls (will be restricted to public transport and active modes only) at key locations along the MRT corridor will improve priority and frontage activation, but the subsequent impact of traffic diversion, reduced vehicular access and removal of on-street parking may result in access issues for businesses and surrounding communities. - Areas of city not serviced by MRT route e.g. East.	- Network integration study at the start of the DBC to review accessibility/access for the proposed designs.	**Critical**
2052-02	**Governance** There is a threat the future Delivery Entity is not fit for purpose and doesn't have the appropriate powers/mandates.	- The delivery entity and its mandates/powers are currently unknown for the next phases of this project delivery. - ALR and LGWM lead to a national policy on how to govern major transport projects and MRT is forced to adopt the mandated governance structure.	- Proposed Governance structure to mitigate.	**High**